

COAST ARTILLERY JOURNAL



NEW 105-MM. ANTI-AIRCRAFT GUN

MARCH-APRIL, 1934

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The United States Coast Artillery Association



"The purpose of the Association shall be to promote the efficiency of the Coast Artillery Corps by maintaining its standards and traditions, by disseminating professional knowledge, by inspiring greater effort towards the improvement of material and methods of training, and by fostering mutual understanding, respect and coöperation among all arms, branches and components of the Regular Army, National Guard, Organized Reserve and Reserve Officers' Training Corps."



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"The Association shall consist of Active, Associate, and Honorary Members.

"The following shall be eligible for Active membership:

- a. Commissioned officers, active or retired, of the Coast Artillery of the Army of the United States.
- b. Commissioned officers, active or retired, of the Staff Corps and Departments of the Army of the United States who at any time have served in the Coast Artillery.
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- e. General officers, active or retired, of the Army of the United States.

"The following shall be eligible for Associate membership:

- a. Commissioned officers and former commissioned officers in good standing of the United States Army, Navy, Marine Corps, Coast Guard and Public Health Service.
- b. Warrant officers and noncommissioned officers of the Coast Artillery of the Army of the United States.
- c. Members of the Coast Artillery Units of the Reserve Officers' Training Corps and Citizens' Military Training Camps.

"The following shall be eligible for Honorary membership:

- a. Civilians who have demonstrated their interest in national military preparedness.
- b. Persons who have rendered distinguished services to the Association or to the United States."

General Gulick's Message to the Corps

WAR DEPARTMENT
OFFICE OF THE CHIEF OF COAST ARTILLERY
WASHINGTON

March 21, 1934.

TO THE COAST ARTILLERY CORPS:

Before relinquishing the duties of Chief of Coast Artillery on March 21, 1934, I desire to express through the COAST ARTILLERY JOURNAL my keen appreciation of the loyal support and efficient coöperation which have been extended to me by all ranks and grades of the Coast Artillery Corps of the Army of the United States.

In a message to the Coast Artillery Corps published in the May, 1930, number of the COAST ARTILLERY JOURNAL, I set forth certain objectives which I hoped to accomplish during my tour of duty as Chief of Coast Artillery. While we have not been able to accomplish all the things I had hoped to do, I believe that despite the economic depression which has existed throughout the past four years, we have made substantial progress in organization, equipment, training, and in preparation for our mobilization mission. I also believe that there has been brought about a better understanding of our mission, unity of purpose and an increase in morale.

In the above-mentioned message, I stated:

"As long as navies exist and ships carrying guns navigate the seas or the air, an efficient and effective Coast Artillery is essential."

Nothing has occurred during the past four years which would tend to question the truthfulness of the above statement. In my opinion, the next five years will be marked by important and fundamental changes in the organization and equipment of the Army. The Coast Artillery Corps with its varied activities must be prepared to meet the situation. I urge that the progressive development of seacoast and antiaircraft artillery already initiated be continued, that you look forward to the future and not to the past, that you cultivate the spirit of aggressiveness and that you keep in mind at all times the fine traditions of the Coast Artillery Corps. If you do these things, you can look forward to the future with confidence.

It has been an inspiration to me to know intimately the fine men and women who constitute the personnel of the Coast Artillery Corps and to observe the efficient manner in which they have carried on their tasks under difficult conditions. It is my intention to continue in active service, and I am looking forward to serving again with the personnel of the Coast Artillery Corps.

JOHN W. GULICK, *Major General,*
Chief of Coast Artillery.

Notes of the Coast Artillery Association

General Gulick Resigns as President of the United States Coast Artillery Association

IT IS with sincere regret that the JOURNAL announces the resignation of Major General John W. Gulick as President of the United States Coast Artillery Association, which office he has held since the organization of the Association. During his tenure of office as Chief of the Coast Artillery the Association was brought into being and has developed to its present flourishing condition. General Gulick has consistently manifested the keenest interest in everything affecting the welfare of the Association; he has been diligent in promoting its best interest, and in initiating plans for its progress and development.

In submitting his resignation to the Executive Council, General Gulick expressed himself as follows:

As I will relinquish the duties of Chief of Coast Artillery on March 21, 1934, and have accepted an appointment as Brigadier General, effective April 1, 1934, I hereby resign as President of the Coast Artillery Association, effective March 21, 1934.

I believe it is a matter of sound policy that I should not continue as President of the Coast Artillery Association and that the Council should elect my successor without delay.

The Coast Artillery Association is very close to my heart. I believe it has already amply justified its organization. It has promoted improvement in training and morale in the Coast Artillery organizations not only of the Regular Army but of the National Guard and of the Organized Reserves. I hope it will continue to expand its field of usefulness and that it will continue to receive the support which has been given so generously since its organization. I shall, of course, continue my membership in the Coast Artillery Association and I shall continue to take an interest in its affairs and in its development. I hope that you will not fail to call upon me if you need any assistance.

JOHN W. GULICK,
*Major General,
Chief of Coast Artillery.*

The Executive Council of the Association held a meeting on March 16th, regretfully accepted the resignation and, on behalf of the Association, extended to the retiring president a vote of thanks and appreciation for his untiring efforts in working for the best interest of the Association and the Coast Artillery Corps.

At the same time Major General William F. Hase, Chief of Coast Artillery, was elected to the office vacated by General Gulick. We know that General Hase's interest in the Association is equal to that of his predecessor and that he will continue the policies and do everything possible to promote the welfare of the Association.

Meeting of the U. S. Coast Artillery Association Now Assured

The last issue of the COAST ARTILLERY JOURNAL car-

ried an announcement to the effect that plans were being formulated for a general assembly and convention of the U. S. Coast Artillery Association. The New York Chapter of the Association extended an invitation to the Executive Council to hold the meeting in the metropolitan area on June 8, 9 and 10, 1934. These dates were selected because the Atlantic Division of the United States Fleet will be in New York Harbor at that time. It is anticipated that our friends of the Navy will cooperate and will be glad to have visiting officers inspect the various ships. It is understood that two of the Navy aircraft carriers will be present; visits to these should be unusually interesting.

At a meeting of the Executive Council of the Association, held on March 16, 1934, it was unanimously decided to accept the invitation. Immediately upon receipt of this information the President of the New York Chapter, Brig. Gen. John J. Byrne, N.Y.N.G., appointed a committee to formulate and make arrangements for the convention. The committee consists of:

Colonel F. W. Stopford, Chairman,
Colonel William Ottmann,
Colonel Byer H. Pendry,
Colonel Louis M. Theiry,
Colonel Roberts S. Allyn.

Plans have not yet developed to the point where complete and final announcement can be disclosed, sufficient it is to say that everything possible will be done for the entertainment, comfort, recreation, amusement and professional advancement of the visiting officers. All components of the Army will participate and we have every reason to believe that a most interesting and instructive program, which will take care of all, whether rich or poor, high or low, will be worked out. All members of the Association who can possibly arrange to do so should plan to be present. We know that the committee will spare no effort to make the meeting both pleasant and profitable.

If possible the program will include parades, reviews, demonstrations of antiaircraft artillery, and perhaps a trip to Fort Hancock to witness artillery firing. In addition, there will be suppers, dances, amusements and other enjoyable social features. Watch for complete details in the next issue of the COAST ARTILLERY JOURNAL. As soon as possible, complete details will be furnished to Instructors of Reserve and National Guard regiments. Also, inquiries may be addressed to the Secretary of the Association or to the Chairman of the committee, Colonel F. W. Stopford, 641 Washington Street, New York, N. Y. Better make reservations in your engagement book, and prepare to have a thoroughly enjoyable time. Do not forget the dates June 8-9, 1934.

Another Trophy Goes West

THE November-December, 1933, issue of the JOURNAL carried the announcement that one of the trophies awarded by the United States Coast Artillery Association was won by the 529th C.A. (AA), a reserve regiment with its headquarters in Portland, Oregon. That regiment distinguished itself by accumulating the greatest average number of credit hours per member during the training year ending on June 30, 1933.

It is now our pleasure to announce that the trophy awarded annually by the Association to the National Guard regiment for general excellence and outstanding performance during the training year 1933, has been awarded to the 249th C.A. (HD). This regiment is commanded by Lt. Col. Clifton M. Irwin, of Portland, Oregon. The unit instructor is Captain L. D. Farnsworth, with headquarters in Salem. The basis of the award is as follows:

WEIGHT

- | | |
|--|----|
| 1. Results attained at target practice with the principal weapon | 70 |
| 2. Per cent of batteries of regiment rated satisfactory at annual inspection | 10 |
| 3. Attendance at drills during twelve months prior to armory inspection | 5 |
| 4. Per cent of personnel qualified as gunners | 5 |
| 5. Per cent of units rated satisfactory at field inspection | 10 |

It is apparent that the results attained in target practice is the largest factor in determining the winner, nevertheless general excellence in other activities play an important part. This acts as a counterbalance to the vagaries of the fickle goddess of chance, who might play a too prominent part if the award was based solely on the score resulting from target practice; but when a particular organization excels in all of the above listed activities it is safe to assume that an efficient, up and doing organization has been developed. This is undoubtedly true when applied to the 249th, and we wish to congratulate the commanding officer, the officers and enlisted personnel of this regiment for their demonstrated ability and their readiness to meet promptly any demands which might be made upon them if it should become necessary for them to defend our shores (aggressor nations take notice). The regiment consists of headquarters, headquarters battery,

band, and five firing batteries. The total score of the regiment was 95.92 out of a possible 100. We consider this an excellent and enviable record—one which will be difficult to equal or exceed—but we hope that it will prove an incentive for others to emulate.

Other organizations which were given honorable mention in the report of the Chief of the National Guard Bureau to the Chief of Coast Artillery were:

248th C.A. (HD) Washington National Guard, three firing batteries, 92.25.

211th C.A. (AA) Massachusetts National Guard, four firing batteries, 90.59.

243d C.A. (HD) Rhode Island National Guard, nine firing batteries, 89.95.

198th C.A. (AA) Delaware National Guard, eight firing batteries, 83.46.

The United States Coast Artillery Association salutes all of these and only regrets that it is not possible to make a more tangible acknowledgment of their demonstrated worth and merit. It should be noted that the 243d C.A. (HD) (one of the runners up in this year's contest) won the trophy for the training year of

1932 with a score of 90.23 — only .28 higher than their score for the training year of 1933. This shows consistency and a high degree of excellence.

On February 27th the President of the United States Coast Artillery Association, Major General John W. Gulick, sent the following letter to Lieut. Col. Irwin, Commanding Officer of the 249th C.A. Ore. N.G.:

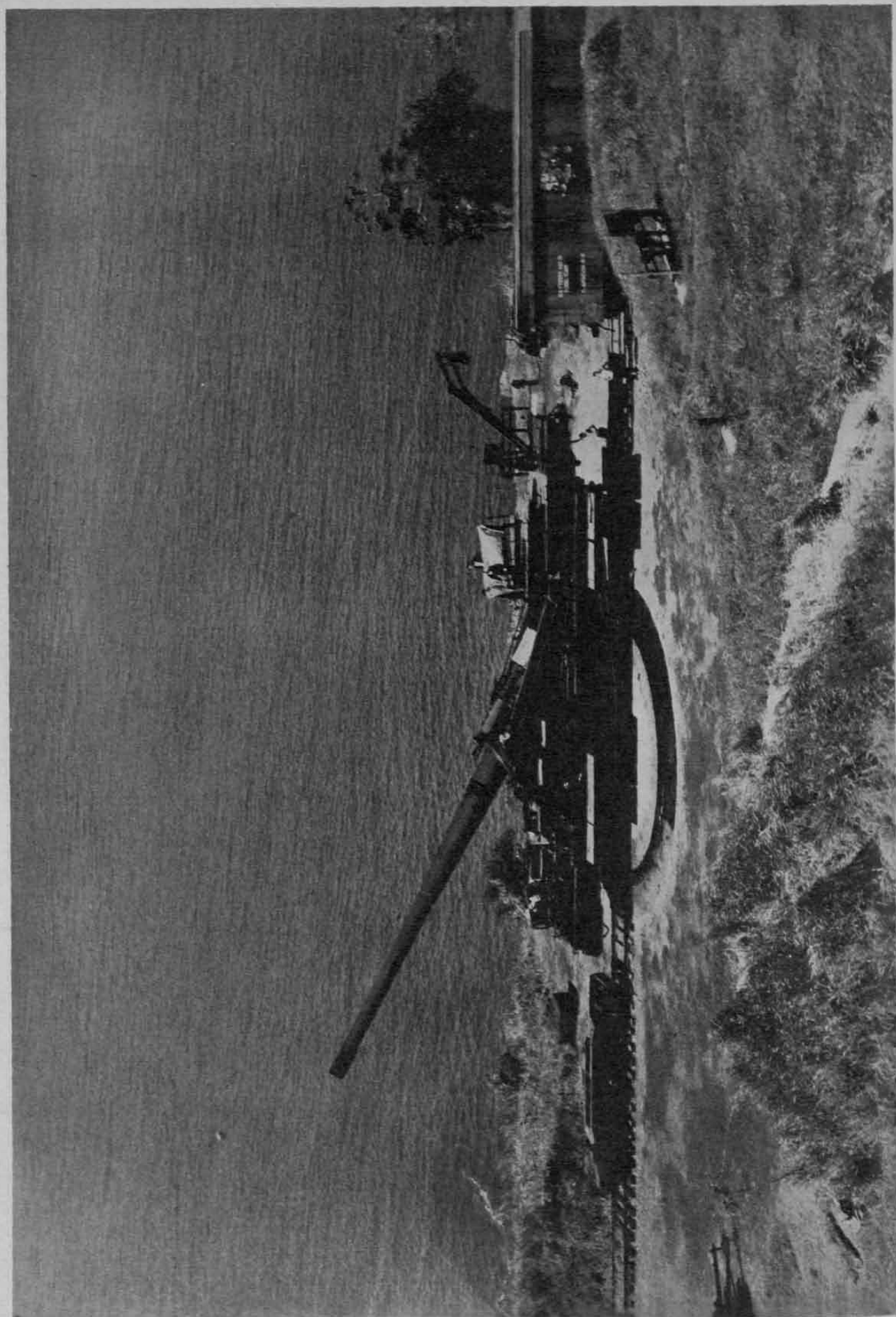
"My dear Colonel Irwin:

"It gives me great pleasure to inform you that the Coast Artillery Association has selected the 249th Coast Artillery, Oregon National Guard, as the outstanding National Guard regiment for the training year 1933, and will accordingly award its trophy for the year 1933 to your regiment.

"I congratulate you and the officers and the enlisted men of your regiment on the winning of this trophy. You have every reason to be proud of your accomplishment."



LT. COL. CLIFTON M. IRWIN
Graduated from Stanford University in Civil Engineering in 1916. Graduated Coast Artillery School N. G. Battery Commanders' Course 1929. Graduated Coast Artillery School N. G. Field Officers' Course 1932. War Service overseas with 18th Engineers R. R. Commanding 249th Coast Artillery, since February, 1930.



Fourteen-Inch Railway Gun in Firing Position, Panama



The Role of Defensive Pursuit

Photo by U. S. Army Air

PART III

PURSUIT OPERATIONS IN THE FORT KNOX EXERCISES

BY CAPTAIN CLAIRE L. CHENNAULT, AIR CORPS

THE plan for the joint Antiaircraft-Air Corps Exercises, Fort Knox, Kentucky, May 15-27, 1933, was drawn for the following announced purposes:

1. To develop the tactics and technique of antiaircraft artillery defense against aerial attack, with and without the coöperation of pursuit aviation.
2. To investigate the use of a distant intelligence net in coöperation with Air Corps units assigned defensive missions.
3. To test and develop tactics, technique and equipment of the Air Corps.
4. To test and develop tactics and technique of the use of smoke and other chemicals in the attack of ground installations by aircraft.

The plan did not contemplate the engagement of rival forces in a war maneuver and no attempt was made to assess losses or damages resulting from any operation. A careful study of the plan, followed by an analysis of the subsequent exercises, might lead the reader to infer that the exercises were primarily intended to determine the ability of our present antiaircraft equipment to detect the approach of modern bombardment airplanes to a target in such time as to permit the delivery of some fire upon some of the airplanes.

The problem drawn under this plan placed Blue (north) on the attacking side and Red (south) on the defending side. The line: Terre Haute-Rushville-Connersville-Gilbert-Cincinnati (all Blue)—Ohio River-Catlettsburg-Big Sandy River-Tug Fork-Jamboree (all Red) forms the boundary line. Hostilities have started.

Fort Knox is a regulating station with supplies concentrated in the northern part of the Post. It is assumed to be vitally necessary to protect Fort Knox from attacks by Blue bombardment and attack aviation.

The Blue force, based at Patterson Field, north of Dayton, consisted of three bombardment squadrons, two attack squadrons (all below war strength), and one observation squadron. No pursuit was included.

The Blue bombardment force was composed of three different types, B-2's, B-7's and B-9's, with a total strength of not more than 25 airplanes. The Blue attack forces consisted of nine A-8's and nine P-16's; the latter is the two-seater pursuit type employed as attack aviation for this problem only. The observation squadron was equipped with several types of aircraft and had sufficient strength to undertake all the missions required for such a small striking force.

Due to the fact that the bombardment airplanes were of three different types, with varying characteristics of speed, climb, and ceiling, it was impracticable to operate the bombardment force as a unit. In fact, all bombardment operations were characterized by the operation of each type in a small, independent formation. Mass action upon the target was achieved by requiring the independent formations to arrive at a designated assembly point, relatively close to Fort Knox, at a designated time. From this assembly point, the attacks of the several units were coöordinated fairly accurately.

The employment of two types of attack aviation made it necessary for attack to employ the same general scheme

of operation. However, attack usually alternated the two types, employing nine P-16's for one mission and nine A-8's for the next.

The defending force had its headquarters at Fort Knox, where all the ground guns, searchlights, and listening devices were located, and a pursuit group, with limited observation, at Bowman Field, Louisville, Ky. The defense also operated a distant intelligence net.

The 1st Pursuit Group, consisting of two pursuit squadrons at war strength and a number of two-seater P-16's, used for observation and command planes, constituted the defensive air force. In addition to the airplanes provided by the 1st Pursuit Group, the 325th Observation Squadron (Reserve), at war strength, was assigned to duty with the defending force on May 14. This squadron is equipped with obsolete types of airplanes and, despite the enthusiasm and ability of its personnel, could do little except provide a ferry and messenger service between Fort Knox and Bowman Field.

The intelligence net was constructed by establishing observation listening posts at an average lateral distance from each other of six miles in three bands. These bands were limited by describing arcs of a circle at 125 miles, 100 miles, 75 miles, and 50 miles from Fort Knox as a center. The outer line of posts was located at an average distance of about 110 miles, the middle line about 85 miles, and the inner line about 60 miles from Knox. Thus the longitudinal distance between posts on successive lines was about 25 miles and the last reports of any invading aircraft originated at an average distance of 60 miles from the defended point and about 35 miles from the pursuit airdrome. After crossing the inner line of posts, a hostile airplane simply disappeared until it was intercepted by pursuit or was sighted by the ground defenses at Fort Knox. The net was strengthened by adding three cavalry "radio" posts, located near the 50-mile line. The intelligence net consisted of 69 observation listening posts with telephone connections and three "radio" posts. It covered an area of approximately sixteen thousand square miles in the form of a 120° angle, with its apex at Knox.

In order to facilitate the location of reporting stations, the area was divided into twelve sectors (by radial lines) and five sections. The sectors were named and the sections numbered. Each post was given a name designed to facilitate its clear reception over telephone lines or by radio.

A study of the map reproduced here will impress the reader with the amount of thought devoted to planning the details of the first American aircraft reporting net.

The information net was established by the Signal Corps and observation-listening posts were manned by soldiers from the ground branches. These men had very little instruction and experience in identifying aircraft by types and were provided with no instruments for the calculation of altitude or course. The altitude was reported

by the indefinite terms, "Low," "High," and "Very High." This indefiniteness as to altitude made the tracking, identification and interception of hostile aircraft very difficult. Pursuit was forced to search a vertical band many thousand feet deep in order to intercept airplanes reported by different posts as "High" and "Very High."

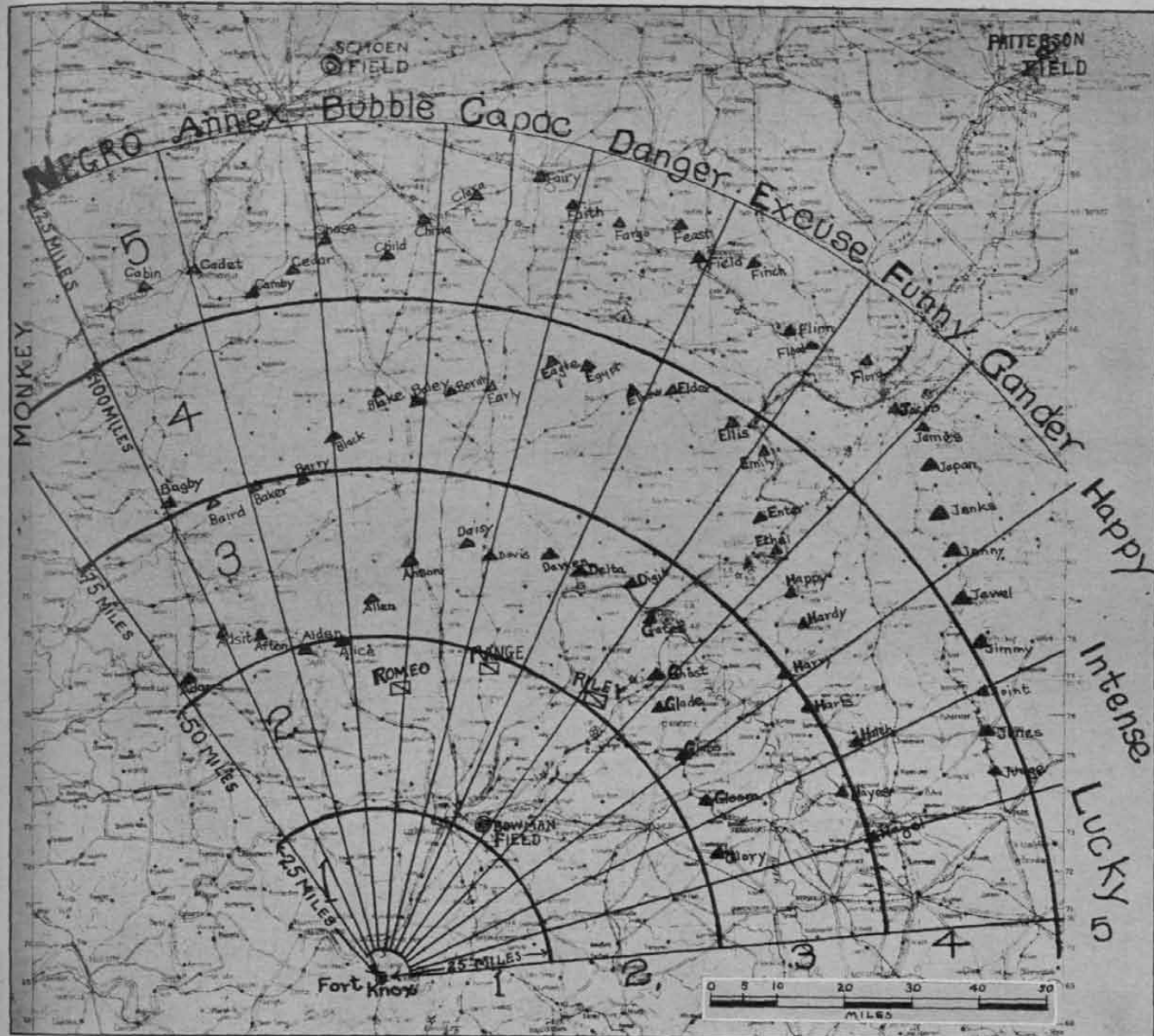
The experience gained by the British after long continued tests of their information net indicates that the effectiveness of the net is directly proportional to the experience of the observers. Their net is manned by a special branch of the military reserve known as the Observers Corps.

Communication from observation-listening posts was by telephone to the Pursuit Group operation office. The three "radio" posts communicated directly to the same office by radio. A two-way teletype system relayed observer reports to Defense Headquarters at Fort Knox. Reports from all posts came in with surprising speed. Reports were frequently received within a minute after the hostile aircraft were sighted. A hasty calculation indicates that after the second day's operations the average time required for the receipt of reports from all stations was between two and three minutes. This is considerably greater than the time required for the receipt of reports from the British net,* but it must be borne in mind that reports from the British net are received over military lines with no intermediate connections between observation posts and information centers.

The separation of Defense Headquarters and Pursuit Group Headquarters imposed no particular penalty for the exercises, due to the fact that the commander of the Pursuit Group was given almost complete freedom of action. The exercises did not require the close coördination of the action of the pursuit force and the ground defenses. The pursuit commander was told, in effect, to make interception when he thought advisable, and by any method that appeared practicable. Instructions were issued at times for the testing of certain tactical measures but they were issued well in advance. This freedom of action was absolutely necessary under the circumstances, i.e., the separation in time and space of the two command posts. The result was that the commander of the defense actually had no control over one of his weapons. Had some unexpected situation developed, he would have required from five to twenty minutes to gain control of his pursuit force. This time interval is too long where the action proceeds at the rate of three miles per minute—or faster. The British have found, from experience, that any division of authority or command in the defense system results in ineffective operations.

As a result of preliminary training and a careful analysis of conditions, the 1st Pursuit Group adopted the following schemes of maneuver for its attempts at interceptions:

*Extract from M. I. D. Report, dated July 31, 1931, " * * * raid warnings are received and plotted on the map in the operation's headquarters within half a minute."



1. Upon receipt of information from the outer band of the intelligence net that hostile aircraft were approaching, the entire group would take off and form as a group at a point on a direct line between the reporting station and Fort Knox, gaining altitude en route. Subsequent information on the location of the hostile aircraft was transmitted by radio to the group commander in the air. The group commander would then direct, by radio, such changes as might be found necessary to maintain the group between the enemy and his objective. Upon receipt of information from a station on the inner band of the net, the group would be deployed on a front of about 25 miles, with one squadron on each side of the group commander. The group commander would then proceed on a line from his position to the last reported position of the hostile aircraft, or to some point on the projection of the line of flight of the hostile aircraft.

2. Upon receipt of information from the outer band of the intelligence net, the squadrons of the group would

take off and proceed to designated "stand-by" areas. In this case the squadrons operated independently under the direction of the group commander, who might be in the air or on the ground. Upon receipt of further information as to the location of hostile aircraft, the squadrons were maneuvered by radio, either from a command airplane or from the ground station. Upon receipt of information from a post of the inner band, the squadrons were maneuvered into position for interception.

3. Upon receipt of information from the outer band of the net, independent flight patrols of six airplanes were dispatched to adjacent patrol areas which extended across the entire net from east to west at about fifty miles distance from Fort Knox. In this case each squadron was commanded by its squadron commander, who actually led one of the patrol flights. The group commander directed the maneuver of the group from a command airplane or from the ground station. Upon receipt of information from any of the flights that hostile aircraft were

visible, the group, or an effective portion of it, was assembled upon the flight in contact.

In employing the above described methods during the exercises the ground net was supplemented on all operations except two by maintaining surveillance of the hostile airdrome by observation airplanes. On numerous occasions this observation reported the take-off of hostile aviation by type and number, and following its position until interception was effected. This employment of observation was made possible because the plans for the exercises included no fighting type aircraft in the composition of the Blue Air Force.

At this point it is appropriate to note that the Air Force lacking an effective force of fighter craft will always be exposed to the surveillance of the enemy who has an effective force of fighters. In the next great war aerial operations will depend upon observation for effectiveness as much as ground operations do. The information obtained by observation airplanes will be fought for. Only airplanes designed for combat in their own element can support their own observation and deny hostile observation. Likewise, aerial observation for surface forces can be maintained only by the support of fighter type aircraft.

During the course of the Exercises, the commander of the Blue Air Force protested against two phases of Red aerial activity and requested that limitations be placed on each.

The first protest was lodged in connection with a technical objective of the Exercises and stated, in effect, that pursuit operating within 25 miles of the ground defenses neutralized the effect of mufflers on the bombardment airplanes. Therefore, in order to obtain data relative to the value of mufflers, pursuit operations were prohibited within 25 miles of Fort Knox. This restriction was of double value to bombardment because it enabled that force to make its approach to the target in dispersed formations, which could not have been done under pursuit attacks, in addition to depriving the ground defenses of the aid of the noise made by attacking pursuit airplanes in locating the hostile bombers. This protest would not have been justified in a war maneuver and the conditions created by the restriction would not exist in actual service.

The second protest related to the employment of Red aviation in constant surveillance of the Blue airdrome. The commander of the Blue Air Force requested the Director of the Exercises to prohibit Red observation from maintaining constant surveillance of the Blue airdrome. Paragraph 7 *e*, Section II, Air Corps Annex to the Plan for the Joint Exercises reads as follows:

"e. Observation Missions for the Defense. (1) General. For the purpose of determining the feasibility of having observation aviation maintain constant surveillance of bombardment and attack airdromes for the purpose of determining when they clear, the routes they take, and imparting this information to defending pursuit.

"(2) Support of Defensive Pursuit. The mission

above noted will be given the designation which appears in this sub-paragraph and prior to the time that the bombardment and/or attack clears Patterson Field, will take off, fly above the airdrome (Blue) and communicate directly with the defending pursuit, reporting to it the time at which bombardment or attack clears (the airdrome) and, by following it, will report its route and time over prominent terrain features in Red territory to determine the amount of assistance such support will be to defending pursuit."

The plan for these exercises was drawn by a board of officers which did not include a representative from a tactical pursuit organization. According to that plan, the Blue forces had no pursuit or antiaircraft artillery assigned. A purely offensive force, similar to that recommended by Gen. Douhet, was organized for the purpose of testing such a force against the opposition of a purely defensive force. It appears that too much ground was conceded to the defense either because of Douhet's doctrine of bombardment invincibility or because of the exploded theory that pursuit cannot make interception of hostile aircraft.

This protest resulted in Red observation being restricted to observation of Blue airdrome activities at intervals of not less than fifteen minutes.

During one phase of the maneuvers, Wednesday morning, May 24, the pursuit force operated on information furnished by the ground net only. All Blue aviation entering the net during this phase was intercepted well outside the 25 mile limit. The group operated on maneuver scheme No. 2 during this period and was in the air for a total of two hours and four minutes. Blue attack operated independently in two formations during the period.

The afternoon phase, 12:00 noon to 4:00 p.m., was conducted with the ground net entirely out of commission. The 4th Provisional Observation Squadron (Blue) was attached to the defensive force for this phase. In addition to the observation airplanes provided by this squadron, eleven pursuit airplanes equipped with two-way radio were employed as observation. Thus an observation force almost equal in numbers to the defensive combat force was provided.

Observation airplanes were ordered on patrol in all the sectors across the middle of the defense area. One of these planes reported a formation of nine bombers at 14,000 feet and directed the interception of this formation by radio by 30 pursuit airplanes. Twenty minutes later, fifteen pursuit airplanes intercepted eight A-8's (attack planes).

Thus we find pursuit making interceptions upon information furnished by both the ground net and by aerial observation and by each agency alone. A comparison of the two methods of obtaining information for pursuit interceptions indicates that the employment of aerial observation alone for continuous operations would require an obviously impossible number of observation

units. The value of long range observation employed to observe activities on hostile airdrome areas, to track and to report the position of hostile units in the air at periodic intervals was clearly demonstrated by these exercises. These missions can be accomplished by a reasonable number of long range observation units equipped with high speed airplanes.

One of the outstanding features of pursuit defensive operations during these exercises was the effectiveness of its radio communications. Every pursuit mission depended for success upon radio communication between airplanes in the air or between the ground station and airplanes in the air. Frequently information from long range observation engaged in tracking a hostile formation was relayed twice before being received by the pursuit pilots in the air.

In order to insure the receipt of information from distant observation airplanes, a Ford tri-motor airplane equipped with powerful two-way radio was flown over Red territory in the vicinity of Cincinnati. Information from distant planes was relayed to the operations office at Bowman Field, thence to pursuit units in the air. Due to the fact that only one airplane of this type was available, the C-19 employed for this purpose was flown about twelve hours on 22 May.

An interesting experience relating to the use of radio by the enemy to "jam" or "block" defensive radio communications occurred when the Blue force attempted to jam radio communications from pursuit group headquarters. A Blue observation plane patrolled over Bowman Field on May 16 and employed its radio exclusively for the purpose of jamming radio communication to and from the pursuit ground station. Red pursuit intercepted all the hostile bombers that entered the net during this period of attempted interference. During the May 18-19, noon to noon phase, a Blue bombardment airplane took station over the pursuit airdrome and set up all the interference it was capable of producing. Red pursuit operated exclusively on information furnished by the ground station and succeeded in intercepting eleven Blue bombers and eight attack planes. The radio interference produced by the Blue bomber prevented the receipt of acknowledgment of messages sent to Red pursuit in the air but did not prevent the clear reception of those messages by pursuit pilots at some distance from the interfering set. This experience indicates that a powerful ground station can send messages through interference set up by any radio set that can be flown in the air.

It is hardly necessary to point out that it would be impossible to maintain an interfering set in a big, slow airplane over or in the vicinity of a pursuit airdrome in actual service.

As a general rule, it is believed that defensive pursuit, operating over friendly or occupied territory, can always maintain radio communication between powerful ground stations and pursuit airplanes in the air. In such situations, interference from friendly radio stations can be

controlled and the enemy cannot fly a radio set into the area of pursuit activities sufficiently powerful to compete with ground stations.

A study of pursuit operations during the entire period of the exercises reveals that interceptions were effected under all three of the schemes of maneuver adopted by the 1st Pursuit Group. Technically, the flight methods required under these schemes of maneuver should be classified as a combination of patrol and line of flight interception. These methods resulted in long flying hours for the defensive force and consequent exhaustion of personnel and matériel. This excessive consumption of pursuit effort inflicted no particular penalty upon the defensive force during these exercises because of the frequent rest periods afforded by the schedule of operations. In addition to the rest periods, pursuit was not required to attempt interception at night. An enormously greater pursuit force would be required for continuous defensive operations over an extended period unless line of flight interceptions could be consistently effected.

Line of flight interceptions require the minimum expenditure of defensive effort since pursuit flies by the most direct route from its airdrome to an interception of the hostile force at some point upon its line of flight. The intercepting pursuit force maneuvers en route only to counter changes of course adopted by the invading force. The initial course of the intercepting force places it between the most probable objectives of the enemy and his invading force. Thereafter, all pursuit maneuvers en route are along interior, therefore shorter, lines.

Defensive effort is further conserved under the line of flight scheme of maneuver by dispatching only such part of the pursuit force as constitutes an effective force for each hostile thrust. The pursuit airplanes required to patrol areas where the enemy does *not* appear are thus conserved and are available for subsequent operations.

Pursuit operating under the line of flight interception scheme of maneuver possesses all the advantages inherent to the defensive attitude of any military force. It is the only method of operation which insures the expenditure of the minimum of defensive effort. The enemy is forced to a far greater expenditure of effort for he is required to encounter the hazards of long flight, often under unfavorable weather conditions, and to engage in combat over hostile terrain.

The 1st Pursuit Group could not operate under the line of flight interception scheme of maneuver during the Exercises. It was forced to adopt a modified scheme of maneuver involving patrol and radio communication between pursuit airplanes in the air because of the inadequacy of the information net set up for these Exercises.

The information net was inadequate for the following reasons:

1. The bands of observation-listening posts were approximately 25 miles apart longitudinally. Hostile bombardment and attack could (and did) change course between the bands. The possibility of the enemy changing

his course between bands, out of visual and auditory range of posts on successive bands, prevented pursuit from consistently making point interceptions on the enemy's line of flight.

2. The information net ended at an average distance of about 60 miles from the defended point. Pursuit was forced to make its interception upon information furnished by the inner band of the net. This condition required some unit of the pursuit force to be in the vicinity of all the stations on the inner band at the moment the final reports were received. The pursuit unit nearest the reporting station would then make contact and assemble a superior pursuit force by radio while en route to the defended point.

3. It did not furnish pursuit with accurate estimates of the type, numbers, course, and altitude of the hostile force. These inaccuracies forced pursuit to search much greater areas in space than would have been necessary if accurate reports had been furnished.

The information net was not what the name implies, but a series of three bands which functioned as a periodic warning service rather than as an intelligence system maintaining a constant record of the location of the hostile air forces.

Notwithstanding the inadequacy of the physical set-up of the net, the lack of equipment and the inexperience of its operating personnel, the net furnished valuable information to the defense. Its operation enabled pursuit to make a far greater percentage of interceptions than have ever before been accomplished in any maneuvers. The commanding officer of the pursuit group states in his final report that "the outer intelligence net operated very satisfactorily and efficiently," and, "in view of the communications difficulties under which the outer intelligence net was operating, everyone connected therewith is certainly to be congratulated."

This first intelligence or information net is certainly a necessary step in the preparation of any defense against the invasion of hostile bombardment. The net should be further improved and developed to the point where it can permit the conservation of all defensive effort, including the pursuit force, and insure the application of an effective force in opposition to any hostile aerial penetration.

The detailed account of pursuit operations for each problem of the exercises is very interesting in that it reveals the immediate accommodation of pursuit methods to constantly changing situations. Flexibility of formations and minor tactics is a most desirable feature of peace-time pursuit training and its value cannot be overestimated. The ability of a unit to operate successfully under adverse as well as under favorable conditions is the surest indication of able leadership and of high morale. These two factors, leadership and morale, were evident in all of the operations of the 1st Pursuit Group throughout the entire period of the exercises.

Lack of space forbids the inclusion of a detailed account of pursuit operations by phases but this discussion of the work of defensive pursuit in the Joint Antiaircraft Air Corps Exercises would not be complete without a brief summary of pursuit operations.

Summary of pursuit operations, May 15-27, 1933. Number of formations clearly identified—27 daytime and 19 night.

Detailed record of interceptions effected:

May 16: 8:30 a.m. 1 0-43 engaged over Bowman Field. Not considered an interception.

9:31 a.m. 9 bombers intercepted by 18 P-6E's west of Bordan, Ind.

9:43 a.m. 9 bombers intercepted by 18 P-12E's west of Sellersburg. (This was the same bombardment formation intercepted by 18 P-6E's at 9:31 a.m.)

10:05 a.m. 18 P-12E's intercepted 9 attack airplanes at Shepherdsville, Ky.

May 17: 1:35 p.m. 18 P-6E's intercepted 6 B-7's near station Davis.

2:14 p.m. 18 P-12E's intercepted 6 B-7's west of Louisville. (This bombardment formation was intercepted twice.)

1:32 p.m. 1 0-31 in danger, 2 south.

1:50 p.m. 1 0-43 at station Alden.

May 18: 9:12 a.m. 18 P-6E's intercepted 7 B-7's and 3 B-9's in Excuse, 2 north.

9:46 a.m. 18 P-6E's intercepted 8 A-8's north of Shepherdsville.

7:35 p.m. 1 P-6E (observation) intercepted 8 B-2's five miles north of Madison.

7:40 p.m. 1 P-12E (observation) intercepted the same B-2 formation ten miles southeast of Madison. (This was the only attempt at interception at night and was successfully completed by two pursuit airplanes operating as observation without the aid of searchlights. In both cases the pilots of the pursuit planes opened up with their radio sending sets while still at a considerable distance; the bombers switched off their lights and disappeared.)

May 19: 2:57 p.m. 18 P-12E's intercepted 5 B-7's east of Louisville.

3:14 p.m. 18 P-12E's intercepted 7 B-2's and 4 B-9's in Excuse, 2 south.

3:17 p.m. 18 P-6E's intercepted 8 A-8's and 1 P-16 in Annex, 1 north.

May 22: 4:20 a.m. 18 P-6E's intercepted 4 B-7's near Bowman Field.

4:25 a.m. 3 P-6E's intercepted 1 B-7 east of Bowman Field.

(These interceptions were effected upon bombardment withdrawing from a dawn attack upon Fort Knox. Pursuit received no aid from the distant intelligence net and the interceptions could not have been made had bombardment avoided the vicinity of the pursuit airdrome.)

9:25 a.m. 18 P-6E's intercepted 6 A-8's near station Gloom.

3:04 p.m. 18 P-12E's intercepted 9 P-16's at Valley Station. (This interception was effected within the prohibited 25-mile zone and was reported as incomplete attempt for that reason.)

May 24: 8:56 a.m. 18 P-6E's intercepted 6 A-8's at station Ghost.

9:11 a.m. 18 P-12E's intercepted the same formation of six A-8's near Simpsonville, Ky.

9:29 a.m. 18 P-6E's intercepted 9 P-16's at station Ghost.

2:57 p.m. 18 P-6E's intercepted 9 bombers near Charleston. At 3:05 p.m., a total of 30 pursuit airplanes were in contact with this formation of 9 bombers. This operation illustrates the ability of defensive pursuit to concentrate superior numbers upon any invading force.

3:18 p.m. 15 P-6E's intercepted 8 A-8's five miles southwest of Bowman Field.

Total interceptions—18 daytime and 1 night.

Total number of hours flown by all pursuit airplanes engaged upon interception missions—approximately 600.
(The end)

Miniature Service Firing

By Colonel H. E. Cloke, 2nd C.A.

MANY schemes and devices have been used to simulate actual service firings by means of sub-caliber work. The present trend of economy has made even sub-caliber firings a rarity. A very successful simulated service firing condition has been established at Fort Monroe for the instruction of the 155-mm. battery personnel.

The terrain at Monroe lends itself admirably to such a set-up, however, the same set-up could probably be used anywhere and as it is very easy and simple to prepare, the idea is passed on for possible help to others.

The 155-mm. guns were set up near the water's edge and a short base line of about 300 yards was established.

All communications, all observation posts and spotters' posts were established as would be required for a regular service practice. This set-up was then placed on the Cloke Plotting Board to a scale of 1 to 10, giving in this manner a base line length of 3,000 yards.

Next a 22 cal. rifle was mounted on the barrel of the 155-mm. guns, with a cradle made by the battery mechanic and the help of an ordnance machinist. This cradle is easy to make and practically negligible in cost; the diagrams are self-explanatory. The cradle is made of wooden two by fours and the straps to fasten it to the 155-mm. gun are enlisted men's web belts; it works very satisfactorily. The only elaborate part of the mounting is the bracket holding the barrel of the 22 cal. rifle.

This construction is necessary to permit the 22 cal. rifle to be accurately bore-sighted and clinometered. It may be found necessary to elevate the trails of the 155-mm. gun in order to secure satisfactory readings on the elevation drum. A 30 cal. rifle may be mounted in the same way.

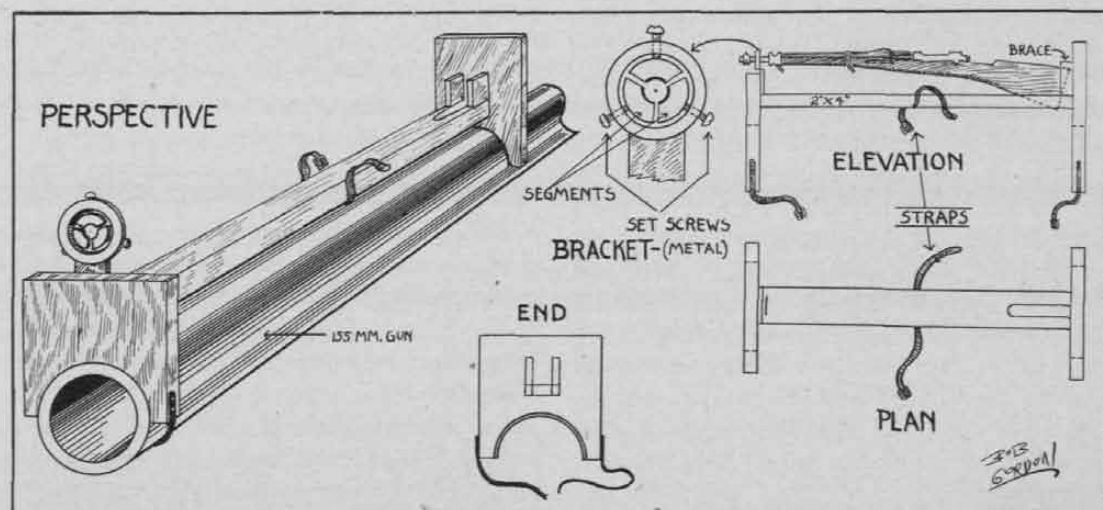
The target is a small float towed by a rowboat. Sighting sticks on this float had small balloons, secured from the AA machine gun outfit, attached to them. The breaking of one of these balloons for a "hit" added greatly to the interest displayed by the men in their drill.

There being no range tables for the 22 cal. rifle, one gun was "shot in" and a proper elevation and drift table made. The four guns used were then calibrated and proper corrections made in range and directions.

The target was slowly towed at a range of 200-300 yards which of course plotted on the Cloke Board as 2,000-3,000 yards. This range was then converted to proper elevations from the prepared range table.

The entire set-up works nicely and has the advantage of having all your men in close at hand.

This system was inaugurated and used by the personnel of Battery A, 51st Coast Artillery, and was initiated by the Harbor Defense Commander. First Lieut. R. H. Kreuger designed the cradle and the Battery Commander, First Lieut. John H. Featherston, coordinated and accomplished the work.



Ex-Caliber Device for 155-mm. Gun

The Air Corps and National Defense

BY THE HONORABLE GEORGE H. DERN
Secretary of War

THE Military Affairs Committee of the House of Representatives has under consideration several proposals relative to the Army Air Corps, other than the specific one submitted by the War Department. In our Army Air Corps we have an excellent group of trained aviators—many of them tested in war, and the others trained in our aviation schools which are not surpassed in efficiency. The performances of our airplanes equal, and in some respects exceed those of any other military airplanes in the world. The strategical and tactical doctrines upon which our Air Corps organization is based represent the most progressive thought influencing military aviation. Consequently the War Department must oppose any change or legislative proposal which it feels would lower the existing high standards of our air personnel, or destroy its efficient organization. It is the firm conviction of the War Department that the legislation proposed would so result.

BALANCED NATIONAL DEFENSE IGNORED

No doubt these proposals have been advanced with a desire to increase the effectiveness of national defense. The considerations involved therein, however, are limited to but one element in the military framework of national defense. While aviation is indeed an important arm, it is only one of several which are comprised in a well-balanced land defense force. Consequently, a fundamental error appears in all of these proposals. They are not well rounded out. They are one-sided and, in fact, appear partisan and even prompted by self-interest. They sacrifice and ignore sound national defense preparedness as a whole, for the aggrandizement of a special group.

The main proposals are embodied in two bills recently introduced in Congress. The first of these two bills, H. R. 7601, would provide an Air Force so far beyond any sane estimate of our defensive needs, and so costly, that its passage could be constructed by the world only as evidence either of ardent militarism, or immediate war. The other, H. R. 7872, while as unsound as the former, has the additional defect of being built through a process of tearing down other vital elements of the balanced framework of defense. Both of these bills exhibit complete lack of consideration for the essential modernization of those other vital defense agencies in which the average, humble citizen must play his part if called to war. These two bills contain other definite proposals so fundamentally unsound as to jeopardize the safety of our country in any serious war. They violate principles so basic to sound National Defense organization and system as to risk defeat and disaster in war. The War Department cannot give its approval to any legislation which embodies such false and dangerous doctrines.

Statement to the Committee on Military Affairs, House of Representatives, on recent legislative proposals.

In 1926 the President of the United States convened a board comprising leading citizens to consider the nation's aviation problems. This was known as the "Morrow Board." Every essential proposal contained in the legislation now under discussion was considered by this Board. Most of the arguments and presentations advanced today were heard by that Board. Its conclusions were unanimous and did not include the proposals now again advanced by these extreme adherents of an unsound National Defense organization.

Some of the vital principles involved in these considerations are discussed:

CAPABILITIES AND LIMITATIONS OF MILITARY AVIATION—ITS PROPER FUNCTION

Due to an unremitting, though distorted publicity, many Americans are predisposed to the belief that the airplane will dominate future war, and that the possession of a powerful air force, alone, will make our country safe. Such a belief, no doubt, provides the incentive for these bills which, at an annual increase in cost of a quarter of a billion dollars, would provide us with nearly as many modern military airplanes as the combined military aviation strength of any other two nations on earth. Such a belief is romantic.

The military airplane is a valuable weapon, but it has now, and will have as far into the future as can be foreseen, too many limitations to enable it to be decisive, alone. It can act only when in the air. On the ground it is helpless. Yet it is vitally dependent upon the ground. It requires an extensive, complicated, and extremely vulnerable ground organization which comprises about eighty per cent of the total aviation personnel of an army. Such an organization will sustain the airplane in but limited ventures into the air, during which it is capable of spectacular, but momentary achievement. It is deficient in power of sustained fire, which alone can shake determined resistance. It completely lacks ability to close with an opponent. As demonstrated in the American battles of the World War and frequently since, its ventures are at the mercy of weather. It could no more stand alone than could artillery. Unless its ground organization is adequately protected against hostile ground forces, a large air force would have little decisive and no lasting effect. A disproportionate air force, supported by deficient ground forces, would fall easy prey to an enemy who has created a unified team, with uniformly developed balance of forces.

An air force can attack only by fire, or by dropping of projectiles. Fire is an important agency of combat, but not alone a decisive one. The destruction of armies or populations by projectiles and gas alone is a phantasy of the dreamer. Actual capture of the enemy or the occupation of vital areas is essential before a determined foe can be defeated. An air force alone cannot accomplish these results. The use of balanced forces of destruction, including the due proportion of hand workers on the ground, is necessary. An enemy approaching our shores would be too much concerned over the progress of his ships and his armies to be willing to waste efforts in meaningless aerial bombardment. Such actions beget nothing but increased bitterness of conflict. An enemy would doubtless experiment with some tentative aerial raiding in hopes of causing a diversion of our main efforts. Such efforts, like the bombing of London during the World War, are not decisive in their effects upon the main issues of war. Our own history should convince us that Americans will not yield supinely to the brutality of indiscriminate raiding.

To assume the destruction of armies by attack from the air appears rash. The impressive results of aerial target practice against inanimate objects cannot be taken as a criterion of war. The aviator is human, just like the infantryman who can shoot the spots out of paper targets, yet whose fire scatters all over the landscape when confronted by an opposing human will to destruction. Progress of aerial gunnery has been no more rapid than the progress of antiaircraft fire from the ground. Those demonstrations in which aviators riddle the targets upon which they dive mean very little indeed to the infantryman who, from the experience of his own training, derives confidence that airplanes which approach so close to the ground are going to be shot down like wild ducks from the blind. If the aviator remains at high altitude he can only drop bombs. Harrassed by the fire of antiaircraft artillery, his bombing will be no more accurate nor decisive than the fire of distant artillery; yet far more costly in respect to quantity production.

In land warfare, an air force will be of great value from two viewpoints. Its great mobility coupled with a great though temporary concentration of destructive fires, renders it a most valuable weapon of opportunity. It can be used decisively in a crisis and, when its action is properly coordinated with a ground attack, may strike the decisive blow. Then again it will be of great value in destructive action against distant strategical objectives such as centers and arteries of production, transportation and storage. To be of maximum effect upon the conduct of war, such efforts must be intimately related to the general strategy of war including primarily the movements of ground forces. It is obvious that balanced action of a unified effort will include the best possible means for protection of such critical centers and arteries. This protection will be gained by elastic distribution of facilities; by disposition of antiaircraft defenses; and by the supporting action of friendly aviation. The support of friendly aviation is of extreme importance, and will be furnished by attacks upon hostile

aviation, at times in the air but when possible against airdromes. It becomes obvious that aerial operations in war are by no means so simple as might appear to the layman after perusal of the front page of his newspaper. The combined intelligence of an Army knows fully the relative values involved, and therefore is so insistent upon measures which will insure balanced and harmonious action.

Admitting all that has been said, the zealot may still hold that a large air force will at least protect our coasts from the approach of a hostile fleet. Once more we must remember that the destruction of a single, undefended ship is nothing like the attack upon an organized fleet, equipped with the best antiaircraft defense, and supported from the air. A fleet can operate at night, in fog, and in weather when airplanes are helpless, if not indeed chained to the ground. Capital ships are supported by cordons of speedy auxiliaries, all equipped for antiaircraft fire. Even in the best of weather, to approach such a formidable armada, to single out the critical targets, and to attack decisively in face of fire from above and below would be far different from striking at a defenseless hulk. It would be a grave error to assume that a large air force, alone, is a protection of our coastline. At sea, as on land, a balanced fighting team is likely to be superior to the most spectacular individualism.

In short, an air force is far too costly, in view of its limitations, to be considered an agency for general destruction. It is a weapon of opportunity. The most important contribution that an air force can make to success in war is to aid our armies or navies to win victories. Properly directed it is capable of delivering powerful blows, by surprise, at the crisis of an action. It is of utmost value as an agency for harrassment, for localized destruction, and for general observation. It is not an economic substitute for any of the other arms and services in an army. Regardless of cost, it cannot possibly substitute for the basic combat elements on the ground. It is a valuable agency for support of ground or sea forces in defense of our outposts, our coast lines, and our territory. Its true value as such can be obtained only when it operates as a member of the defense team, subordinated like all other elements to whatever team it happens to accompany. Its true development cannot be obtained unless plans and concepts for its use are woven into the common cloth, with all of the adjustment and compromise necessary in creation of harmony.

To place undue or complete reliance for defense upon an air force *alone* would be fatuous. Yet such would be the effect of passing either of the proposed bills. The passage of H. R. 7601 would double the cost of the Army for years to come. Either bill would result in giving up the balanced structure which is the result of a century of progress. This sort of undue emphasis upon aviation would destroy the balance in preparation which is our only sound insurance against infringement upon American liberties.

On the basis of the above general discussion, the pro-

posals in these bills must be condemned without qualification. A detailed analysis of the potential effect of this legislation prompts emphasizing the following salient and more important violations of vital principles:

NEEDLESS EMBITTERMENT OF GROUND FORCES

This legislation would dishearten and embitter the American ground soldier. The most dangerous and arduous task in war is that of the junior officer of infantry, whether he be regular, national guardsman, or reserve. His is an humble task, not lending itself to the colorful treatment so often accorded tales of combat in the air. The individual football lineman seldom if ever receives the plaudits of the grandstand. Yet the work of the lineman in football or war is of primary importance. The junior officer of the combat arms, on the ground, knows what the casual publicist may forget, that the essence of war consists in effective leading of American citizens, supported by effective weapons and machines on land, in the air, and at sea. The humble lieutenant of infantry works just as hard as does his brother officer in the Air Corps, yet he has been paid much less. He reads in the papers that the air force will decide all future wars, but in his heart he knows that this is not true. He cannot but observe that the plaudits of the crowd are for his friend, the aviator. Year by year he has seen his tiny, skeletonized units grow smaller and smaller to make up increments for expansion of the Air Corps. Reserve infantrymen see more and more of reserve appropriations go into the air. This has all been accepted in good faith. The good soldier knows that the Air Corps, a new arm, needed the sustenance of the matrix to permit it to be built to a balanced proportion. There has been no bitterness of complaint, even over disparity of pay. This is indeed remarkable, for the ground officer knows that a soldier is a soldier whether in the air or on the ground. He also knows that in some other armies the basic pilot is not even given a commission, since he has no need to be a leader of men. In short, the ground officer knows, though he has not yet proclaimed, that the Air Corps has already been given such support as to insure a development beyond that of an efficient balance.

BALANCED MODERNIZATION IGNORED

This legislation would, in marked degree, enlarge one branch beyond balanced proportions, still at the expense of the ground arms and services. Promotion on the ground is to be held up, pending completion of this munificent program. The pitifully small companies, troops, and batteries, on the ground, are to drop a few more of their meager grades and ratings. Facilities for training reserve officers, already deficient, must be affected in proportion. All, supposedly, for modernization. The soldier on the ground, whether he be officer or enlisted man, knows that modernization has been delayed in our ground arms far more than it has in the air. The Army knows that the ground arms need new machines just as desperately as does

the air arm. Modern infantry will need semi-automatic rifles, light machine guns, and modern tanks in considerable numbers. Artillery must have improved weapons and transport and efficient anti-aircraft weapons. Cavalry must keep some of its horses, yet also obtain armored cars and combat vehicles. Yet, because of the lack of public interest in the less spectacular forces of war, practically none of these are in sight.

A land based air force, without effective ground forces, would be little more than a provocation for a well-prepared and balanced hostile force. The only sane policy of defense is to insure a balanced progress for all essential elements. Before proceeding with an unmeasured development of the Air Corps, there is urgent need for consideration of a program which would modernize the ground forces to the degree already reached by our air forces. Such a program would necessitate the provision of modernized primary weapons for the combat arms, which we do not now have. It would necessitate the creation of effective nuclei for mechanized forces which could be expanded in war. Such a nucleus for the infantry must include great numbers of tanks and cross country cars; and for the cavalry combat cars, armored cars, scout cars, and reconnaissance cars. These effective nuclei are now lacking. Our program must also include modernization of army transportation which is but partially contemplated under current, special provisions. Finally, it must include the building of an effective war reserve in all essential materials, including aerial bombs and ammunition of all sorts. The lack of a war reserve would handicap us, in war, far more than any shortage of airplanes. To further enlarge our Air Corps, beyond that recommended, without due consideration for a balanced development of the whole army, such as generally outlined above, would be distortion and would risk defeat in war.

UNDUE AND UN-AMERICAN FAVORITISM

The legislation in question would give obvious advantages to Air Corps officers, beyond flying pay, not possessed by officers of other arms and services. This is particularly true of the retirement clause in H. R. 7601. The effect upon morale of the ground forces would be irreparable. The ground officers of all components, have known their brother officers in the Air Corps, from their earliest days in the service. They know them to be men of character and intelligence, no better nor worse than themselves. They have not begrudged them their 50% increase in pay as a reward for exceptional peace time risks. However, they know that in war, regardless of what grade one considers, their own chances for death, in some arms at least, will be greater than those of the air officers. These bills would increase the existing disparity. Such action would be sheer favoritism; fatuous hero-worship based solely on spectacular values. It would be wholly un-American. This is not believed to be the true intent. The true cause is probably merely a mistaken conception of the importance of an air force in war, as compared with other forces on land and at sea.

BUDGETARY CONFUSION

The proposed legislation would give the Air Corps a separate budgetary status. This would result in confusion in governmental administration at a time when special efforts are being made to simplify such processes. National Defense expenses are always limited in peace. The funds appropriated are never adequate for all preparedness needs. They must be utilized for the good of the whole, to insure balanced results. This suggestion removes the Air Corps from such consideration and would divorce its financial problems from those of the other ground arms. Such a procedure is unsound and parallels the discussion in the preceding and subsequent paragraphs.

SEPARATE AND ADVANCED AIR CORPS PROMOTION

The proposed legislation would give the Air Corps a separate and distinct promotion list. In addition to the 50% increase in pay, these proposals would give air officers rank and all that goes therewith, far in advance of ground officers of the same length of service. This would be a step backward into a morass from which the present single list withdrew the Army, the bad odors of which still cling to our progress. One of our great lessons of the World War would be lost. Teamwork, so vital in all human operation, is above all essential in the operations of armies. The tendency of different arms and services to develop selfishly, and to look upon each other with distrust, is lethal, and has ruined armies and nations, in the past. Such tendencies are intensified by separate promotion lists, with which the Army has had a long and painful experience. Much of the difficulty in arriving at conclusions concerning our air needs has been due to prejudices engendered in war. The mingling of officers of all arms in our schools and staffs has gradually reduced this unfortunate prejudice. To separate these officers in their promotion status—the most human factor in any organization—would now put a complete stop to this healthful progress. This would constitute class legislation of a most vicious sort, and would make far more difficult the problem of combined operations in war.

DISUNITES THE LAND DEFENSE TEAM

These proposals would remove the Air Corps from high command and General Staff coordination and control. This would be another step backwards into the morass of inefficiency from which we have made progress by the evolution of the General Staff conception of coordinated control. The general staff is a coordinating agency, which inevitably makes of it a restrictive agency in respect to details. Each arm and service, composed of zealous officers and enlisted men, conceives of its own problems as peculiar and primary in importance. Harmonious development for all necessitates a paternal restraint upon the undue encroachments of each. When such restraints are exerted, the arm or service in question is prone to blame the General Staff for its ills. The General Staff is not a body of permanent membership. It comprises officers of all

branches, including the Air Corps, who serve most of their years in their own arm or branch. In respect to the Army, the General Staff thus occupies a position analogous to that of Congress in the country as a whole. It is popular with nobody, not even its own members, each of whom inherits the feelings of his own arm or service. Yet without the General Staff there would be a reversion to that childish confusion, friction, and fatal inertia which characterized the bureaucratic control of the War Department during the Spanish-American War. From this chaos we were drawn by the statesmanlike efforts primarily of Elihu Root, whose initial experiments were later perfected by Newton D. Baker. Those vital lessons should not be forgotten merely because of partisan prejudices resulting from enforced restrictions which after all are the result of our national policy.

There is no justification for removal of the Air Corps from the coordinating influence of the General Staff. It has had far greater freedom in respect to its own development than enjoyed by any other arm. Because the General Staff could not give it everything it wants, the General Staff has been accused of repression. By the same standard of comparison, the General Staff has been far more repressive upon the other arms and services. It is time honestly to recognize that the lack of development in modernization of the Army as a whole is not due to the failure of the General Staff. If Congressional action would provide the support necessary to modernize the Army, the General Staff can quickly be transformed into a modernizing machine far superior, as far as the Army is concerned, to any other agency in the country. It is true, as often protested in the Press, that the General Staff appears to lack the power to modernize the Army. This is because the General Staff is paid to administer and control the resources granted it by Congress. It is paid neither to propagandize for progress, nor to rob Peter to pay Paul. If the General Staff has sought to keep Air Corps development in pace with the modernization of the entire structure of national defense, then it should be commended for doing just what it is organized to accomplish. Members of the General Staff have been for years straining at the leash to achieve progress. Let Congress give this balanced agency, unified as it is by the well rounded advice of all military specialties, the support necessary for modernization, and there need be no further fear on such grounds. It should be noted that the Air Corps was not under the general coordinating control of the General Staff until last July. Since that date the records will show more effective and efficient action in the development of the Air Corps than existed in the War Department for the last eight years. This is illustrated by the recent War Department request for legislation looking to a further development of the Air Corps.

The proposed legislation would remove the Air Corps not only from General Staff planning, but also from Army command. To the trained soldier, knowing the intimate relationship between air and ground operations in war, and familiar with the special characteristics of our own

military situation, it is difficult to imagine the purpose of such a proviso. It must be assumed only that these bills ignore completely the vital importance of command, in war, or else the relationship that should exist between air and ground operations in order to obtain maximum combined effect. This separatist tendency is comparable to placing parts of a single football team under separate controls. Subordination to command is indeed irksome at times. The Air Corps, like other army agencies, will fret at times under the restrictions of unified direction. Many an inexperienced halfback, on the football field, has run over his own interference in his youthful zeal and strong sense of self competence. To surrender to such tendencies, particularly in our national situation, would demonstrate a willingness to discount the best teachings of history.

Unity of command over the same area, in war, and unity of planning for combined operations in peace, are sacred commandments for national defense. The layman does not always appreciate that the relationships between the Army and its air force, or a Navy and its air force, are far more intimate and intermingled than are the relations between the Army and the Navy in their few joint operations. Coördination between the Army and Navy, in joint operations, is of sufficient difficulty even under the improving influence of the Joint Board. To attempt to coördinate the Army and its Air Corps, through the agency of a Joint Board would be many times as difficult. To confront ourselves with such difficulties, in our own special case, is a wholly unreasonable proceeding. In certain European countries, where powerful forces are intermingled at arms length, and where air force influence would be at its highest expectancy, experimental separation of control has been a tentative expedient. Indications do not point to whole-hearted belief in such organization, even in those instances. In our own case, there is, certainly at the present phase of development, less reason for this expensive form of organization than in the case of any other major power. The

Commander of our General Headquarters must be given control over the air force component in his armies and also over the larger GHQ air force which is such a vital part of his machinery. Its operations must be fitted into all GHQ plans. This can be done effectively only through the normal functioning of our command and staff mechanism. At the same time this GHQ air force is capable of carrying out more efficiently any and all actions contemplated by the proponents of an independent or separate air force.

UNIFIED AND BALANCED MODERNIZATION IS OUR NEED

There is no Royal Road to national defense. The purchase of a great quantity of airplanes, and the creation of a special corps singled out for extraordinary treatment and favors, will never protect the American people from a determined foe. Our best protection is to accept and build upon American tradition. It has been the American tradition that our wars, if unavoidable, shall be fought by the American citizen, and not by a subsidized class in arms. Separatism of groups and individuals must be frowned upon. Class spirit must be crushed out. There must be no special caste either in the air or on the ground. The task in war is to equip men, train, and lead men. The task in peace is to prepare men. Let us not be led astray into an attempt to purchase freedom with gadgets. Neither let us remain content to employ our forces with obsolete equipment all along the line.

These proposals, if they are to receive serious consideration at all, are of utmost importance in the life of our nation. They can, at the present state, represent little more than lay opinion, perhaps, influenced by the viewpoints of a single specialty. To accept such views without bringing to bear upon them the balanced analysis which can proceed only from the combined testimony of all elements concerned in national defense would be unwise, and is probably not intended.

Excerpts from Letter of Transmittal of the Foregoing Statement from Honorable George H. Dern to Representative McSwain:

* * * Two contentious policies, which have been threshed out many, many times before in Congress and in various deliberative studies and discussions, have been injected. These two are those which involve the inherent organization of the War Department, including the scope of its coördination through a general staff, and the still more controversial issue of the patronage questions involved in an independent and specialized unit among the fighting branches of the Army.

The necessity for coördination in the Army is a problem which has been so thoroughly considered that it would be superfluous even to outline the steps involved. The issue was finally settled, conclusively and absolutely, in the early days of the century in the establishment, under the leadership of Elihu Root and Theodore

Roosevelt, of the general staff. The value of this system was established beyond any doubt by the experiences of the World War. This policy is in effect in every nation of the world. To destroy it at this time is unthinkable. An equally disastrous effect would be caused by the disruption of the single list for the line branches of the Army. This problem antedates even that of the great problem of general staff control and by evolutionary processes was finally settled many years ago to the satisfaction of practically every military thought that has existed or does now exist.

The result of adding these two disruptive issues to the simple problem which was originally advanced by the War Department is to destroy any possibility of concrete and constructive action. To these two measures I am unalterably opposed—opposed to such an extent that I will not attempt to advance the constructive thought involved in the simple increase of the air corps, if it is your intention to couple it with these other issues. * * *

Policies

BY COLONEL J. C. JOHNSON, C.A.C.

NO COMMAND ever functions without policies. At times they are definite, clear-cut, recorded; frequently they are vague, ill-defined, not of record. If of the latter type, they are apt not to be kept prominently in the forefront of daily activities, members of the command will have but a hazy conception of their import, and even the commanding officer would have difficulty in enumerating them. Result: No one in the command has a definite, clear-cut idea of just what is expected of him.

In these days of too frequent changes of commanding officers, policies, like parliamentary governments, are often short lived—ever changing. For this reason, among others, it is important that policies be carefully thought out, *made of official record*, widely distributed, prominently posted, and *stressed as the daily guide of the command*. If well digested and logical, they may be made sufficiently comprehensive definitely to guide the members of the command in their general daily activities, and, if readable, will be eagerly sought by them for study as an aid in personal development of command qualifications. Furthermore, a new commanding officer, finding them in official form, will probably continue them, changing perhaps certain items and adding others to conform to his own concepts of military management but, what is important for the command, perpetuating them *in recorded form*. This is to the decided advantage of all concerned, for it is always conducive to both coöperation and morale to know positively just where the commanding officer stands and just what he expects.

The Inspector General's Department has found a *live*, up-to-date set of recorded policies to be a most important factor in the successful administration of a command—so important, in fact, that inspection guides issued by that department contain the remainder: "Are policies well defined and recorded?"

The accompanying list has been successfully used as the basic policies of command. Distributed, prominently posted, *stressed* at conferences, and *kept alive*, they brought decided results. Local conditions and personal experience of commanding officers and staff will suggest pertinent additions which should supplement this list.

The ten last enumerated are the "Precepts of a Soldier" made familiar to many of us by Major General R. P. Davis under whom many of us have served. Although duplicating one heading, they are kept intact as such. The basic policies as used are as follows:

1. *Command*: Exercise command as far as possible outside the office. A commander's desk is the place for concentration, study, formulation of plans, and action on papers prepared either tentatively or finally by his staff or assistants. Outside the office is the place for him to

observe, supervise and command. The former should occupy a very minor part of his time, the latter the major part.

2. *Chain of Responsibility*: Develop a definite chain of responsibility within your command, organization, office or activity. Responsibility goes with command and a chain of responsibility must go with the chain of command. This chain of responsibility must extend from the commander down to the lowest rank or file who ever exercises authority. Require definite responsibility and definite command functions of each officer, noncommissioned officer and other person in your chain of command.

3. *Thoroughness, System*: In any activity, undertaking or job: first plan; second, organize; third, supervise. Always know *what* is going on, and *how thoroughly* it is being done. Never start any undertaking without first carefully planning and thoroughly organizing it. Never allow it to meander along without supervision. To do so means a decided waste of man power.

4. *Information*: Keep the next higher commander always informed as to instructions received from sources other than his own headquarters, as to progress made or handicaps encountered in any activity, and as to anything under your control in which he should be interested.

5. *Staff Officers*: Staff officers must expedite business by acting for the Commanding Officer in accordance with policies established by him, *keeping him always informed as to action taken*. In the interest of mutual understanding, the Commanding Officer will likewise keep them informed of his actions.

6. *Observation, General*: In the interests of efficiency, all officers should assist in the administration of the command by observing generally and reporting to headquarters any defects or deficiencies not within their jurisdiction to correct, which would add to the efficiency of the command. These should include: defective methods, abuses, neglects, waste, shabbiness of post appearance, defective structures, roads, railroads, water pipes and faucets, automobile speeding, parking or visiting by visitors in "no admittance" areas, and inefficiency and violations of post regulations in general in any department, activity or place.

7. *Conferences*: Periodic conferences at Officer's call are of inestimable value in obtaining and disseminating information and understanding. At these conferences *policies* are stressed, resulting in the coöperation on the part of all personnel as well as the coördination of all activities of the command. Such conferences should be brief and held once or twice a month or whenever found desirable.

8. *Team Efficiency*: A subordinate commander should develop his own team to the maximum state of efficiency

possible, but in so doing must guard against any action which may handicap similar efficiency in the next higher team. In case of conflict of team interests the next higher commander should be consulted.

9. *Coöperation*: Be coöperative. Selfishness or indifference in teamwork is destructive of both efficiency and morale. It is especially destructive of efficiency in the next higher team, such efficiency being dependent largely upon even and coöperative teamwork on the part of all units of which it is composed.

10. *Initiative*: Develop initiative in all subordinates. This can be done by giving them definite responsibility together with freedom of choice of methods in accomplishment, and by exercising over them the necessary supervision to insure results.

11. *Treatment of Subordinates*: Avoid harsh and arbitrary treatment of subordinates. Such action is not "military." It is destructive of both efficiency and morale. Even temperament and justness are prize assets in leadership and command work.

12. *Helpfulness*: Be helpful to both subordinates and superiors. Criticism to be of value must be constructive; an inspection to be of value must be helpful.

13. *Outstanding Accomplishments*: Reward outstanding accomplishment. The instinct of pride is one of the strongest of human instincts, and through it good leadership will seek results.

14. *Competitive Standards*: Encourage competitive standards. These can be brought about only by constructive work in their development, and by thorough and fair constructive inspections of the details involved.

15. *Saluting*: Develop spontaneous, whole-hearted saluting in your command. The salute is the soldier's greeting—his "Good morning"—his "How do you do." When given grudgingly, poor leadership is at fault.

16. *Military Qualities*: Develop discipline, military bearing, smartness of appearance, uniformity and precision. These together with whole-hearted saluting are among the prime requisites of a military command.

17. *Harmony*: Cultivate harmony and community spirit within the command. Neither official nor social activities will thrive without them. Arbitrary dealings, cliques and snobbishness are detrimental to morale, and therefore to efficiency.

18. *Community Spirit*: Cultivate community spirit with neighboring civilian communities. Encourage visits to the post of prominent organizations, clubs, boy and girl scouts, school classes and other groups and individuals. Detail suitable guides to conduct them to historical and other permissible places. Develop public speaking and accept community dinner and speaking invitations. Assist communities in any practical way possible. Isolation breeds contempt of the military. *The service needs the support of public opinion.* Community service needs you.

19. *Messes*: Develop the best messes obtainable with the funds available. This requires supervision and personal attention in buying and to the proper training of

all personnel used in any way in the preparation and serving of food. Messes must not be left to mess sergeants and cooks to plan and manage.

20. *Grades, Ratings*: In the interest of morale, ratings and grades should be distributed among as many members of the command as practicable, having in mind always the importance of the job and the skill or intelligence of the incumbent. Usually the best results can be obtained by giving a new incumbent a lower rating or grade, with the understanding that higher ones will be forthcoming as merited and as available.

21. *Programs, Schedules*: Have definite programs and schedules. Systematize all work. Let no task go by haphazard.

22. *Weekly Schedules*: In any course of instruction, always make out and submit to headquarters weekly schedules of instruction, setting forth for each instruction day:

Course or courses to be pursued.

Period and subject matter to be covered.

References, by texts and paragraphs, to be studied.

Names of senior and other instructors.

Daily period and subject matter, with references for daily refresher instruction of instructors.

Names of instructors for such refresher course.

23. *Athletics, Recreation, Social Activities*: Athletic, recreational and social activities are essential for proper morale and must be included in any well-balanced program. See that such activities are patronized by good command turnouts. At all sports fill the side lines and "root" hard for your team. *Whenever possible*, team practice will constitute a part of the daily scheduled activities, at least for certain days each week.

24. *Duties, List of*: Be definite and explicit. Each charge of quarters, chief of squad room, section leader, squad leader, mess sergeant, supply sergeant, janitor, fireman, orderly, stableman, chauffeur, or other person in charge of any activity should have in his possession a list of all duties required of him. This list should be charged to him and inspected for as part of his equipment. Each clerical desk should have permanently attached to it and kept up to date a list of the duties of its occupant. From this list a new occupant will learn his new duties in a minimum time with minimum instruction; and neglects and errors will decrease in proportion to its completeness. Many an individual falls into routine procedure for lack of definite instructions. If initial lists are found to be incomplete, add to them as delinquencies are noted from time to time.

25. *Post Maintenance*: Post maintenance must be given equal importance with training in determining the efficiency of a command. The command which disregards the maintenance of armament, buildings, installations, and grounds is low in general efficiency.

26. *Maintenance Programs*: Outside painting and other outside maintenance work will, in other than exceptional cases, take precedence over inside work in good

weather, the latter to be done in inclement weather. Approved maintenance programs will be kept showing priorities by buildings, roads, railroads, wharves, storerooms, grounds and all other structures and places. These will be kept separate, 1st, for clement weather and, 2nd, for inclement weather, and must, except in emergency, be adhered to. If the prosecution of any task is desired, it must first be made a part of the maintenance program and be assigned its priority therein. No job may be considered complete until the premises are placed in a state of thorough police.

27. *Troop Labor*: As a general practice, due to small appropriations, all funds allotted for maintenance purposes must be spent for materials, troop labor being employed wherever possible.

28. *Time Tasks*: In maintenance work, well planned time-tasks are encouraged. A good reasonable day's work well planned and laid out through the use of good judgment and common sense, and the detail turned in as soon as completed even if before recall from fatigue is sounded, will usually result in more and better work being done, and in increased will and morale on the part of the laboring personnel. The same may often apply to training. A good snappy drill is of more value than a longer one that drags.

29. *Maintenance Responsibility*: Personnel on duty at any place should, as far as possible, maintain their own buildings, structures, installations, and material. Battery mechanics should ordinarily make repairs to the barracks, buildings and material of their own organizations. Personnel on duty at places such as stables, shops, storehouses and plants can, by proper coördination of their work, usually find time to paint and make at least minor repairs to their own buildings and material. Even one window painted per week will soon make a showing. All persons residing on the reservation are responsible that their own grounds and premises are kept in proper state of police and sanitation, and free from fire hazards.

30. *Man Power*: Economy of man power is mandatory in the present-day garrison. This can be brought about only by careful *planning*, proper *organization* and thorough *supervision* in both training and maintenance. It is imperative for efficiency, thoroughness and contentment of a command. Plans for each job should include a supervisor.

31. *Overhead*: Reduce overhead to a minimum consistent with efficiency. Combine part-time jobs into one. Where two or more offices are located in the same building, arrange to handle peak loads by mutual coöperation between office forces. The tendency to detail permanently in each office a force sufficiently large to carry peak loads must be avoided.

32. *Landscape Work*: Beautify the post. Keep a trained gardener and a substitute available for duty in the greenhouse and on the lawns. Establish and maintain a plant nursery. Procure suitable soils and fertilizers before setting out plants and shrubbery. Loss of plants is often

due to improper soil. Keep compost pit in operation. Keep lawns clean-cut, well drained and free from vehicular incursions, and pirate weeds which kill out the grass.

33. *Safeguarding of Property, Funds*: Make the safeguarding and economical use of government property, supplies and funds among the prime duties of all officers of the command. All supplies purchased, including those for messes, must be inspected by a commissioned officer for quality and quantity. All expenditures must be authorized and supervised by an officer. Security and economical use of property should be obtained *definitely* through the successive links of the chain of responsibility. By proper use of these links, the responsibility for property, supplies and equipment and the economical use of such as water, electric current and fuel become a simple matter, and the necessity for "show down" inspections of equipment may be reduced to a minimum.

34. *Fuel, Lights, Water*: Require maximum economy in the use of fuel, lights and water. These are three evasive elements of army "allowances"—all "come easy, go easy"—and are generally the least supervised as to expenditures. Avoid leaky faucets, superfluous lights, and unburned coal and coke in ash cans. Keep automatic dampers in adjustment. Use all the lights, fuel and water you need, then stop—conserve them as though they were to be paid for by yourself.

35. *Firing*: As an economy measure, permit no one to fire a furnace, boiler, or heater who has not qualified in the course of instruction for firemen. Supervise methods of firing and care of all heating apparatus for which responsible. Observe them daily. Get the habit during firing season of entering or leaving through the furnace room any building for which responsible.

36. *Warehousing, Inventories*: Require proper warehousing as a prime safeguard against inaccurate property accounting. In all inventories, require at least a double check to be made by two competent persons counting independently of each other. Have a system which will insure that every article is counted.

37. *Inspections by Higher Authorities*: Strive to make an inspection held by superior authority a prideful exhibit of appearance, neatness, orderliness, smartness, arrangement, condition of equipment, discipline and efficiency, exhibiting your display with confidence, and with pride in your accomplishment—rather than fearing criticism and hoping merely to get by. Such confidence can be attained only by continuously working toward a definite standard, making each periodical inspection a definite step toward the results desired. In this connection, at any inspection, all irregularities and defects should be made of informal record and inspected for at next inspection to insure positive and definite correction.

38. *Inspections by Responsible Officers*: Make frequent inspections of every activity, battery, installation, barracks (including basement and attic), storeroom, and other place, and of all personnel and sanitary requirements for which responsible. See that there is a definite

chain of responsibility for each thing to be done in each place and activity. At every inspection, especial attention should be directed to fire hazards.

39. *Inspections by Commanding Officer:* In general, approximately eleven half days each month will be devoted by the Commanding Officer to inspection and survey of the command, including the troops and every element and activity of the command. These will, as a rule, be supplemented daily by further outside observation of methods, administration, and efficiency. The above will be so conducted as to interfere least, consistent with the best interests of the command, with training and maintenance activities in progress at the time, and will be made rain or shine. Many defects in evidence on rainy days may not be detected in dry weather.

40. *Test Checks:* From time to time an officer or non-commissioned officer will be detailed as assistant to the Commanding Officer for the purpose of making, under the latter's immediate supervision, test checks of property accounting, accuracy of property and money accounts, methods and records of the Post Exchange, Commissary and various administrative offices, and any other matters deemed necessary for survey or examination.

41. *Loyalty:* Be loyal ever. Loyalty is the keystone of the military arch.

42. *Saluting:* Salute with a gleam in your eye and a snap to your motions, showing that you take a pride in the military appearance of your organization and of yourself as a soldier.

43. *Even Temperament:* Be cheerful always, whatever comes meet it with a smile. The grumbler is a man to be shunned.

44. *Results:* Never say "No" when asked if you can accomplish something—the ways and means may not be apparent but you can find them.

45. *Firmness, Justness:* Be firm and just. Human nature always responds to fairness and firmness.

46. *Courtesy:* Be courteous always. Courtesy is the foundation stone of both military and civil life.

47. *Obedience:* Never discuss nor question orders; execute them to the best of your ability.

48. *Explanations:* Never explain unless directed to do so. If corrected say "Yes sir," and conform cheerfully to instructions.

49. *Conduct:* Live in peace and charity with the other members of the command. Duty first, self afterwards. He who concentrates on self will never be a soldier.

50. *Example:* Make yourself appreciate subconsciously the foregoing precepts. Unless you do, and live up to them, you are not a soldier.



Capitalizing Leisure in the C. C. C.

BY CAPTAIN WILLIAM W. WERTZ, C.A.C.



Camp Cordell Hull Before Barracks Were Built

SIX months at Camp Cordell Hull, a Civilian Conservation Corps camp in northeastern Tennessee, has clearly emphasized the opportunities present for service to the young manhood of the country. Established late in May, 1933, by C.C.C. Company No. 1455, Camp Cordell Hull early became one of the few double camps in the South, when Company No. 1472 joined it the following month.

Situated in the beautiful valley known as Limestone Cove, at the foot of Unaka Mountain, flanked on either

side by wooded hills, and nestling on the bank of the turbulent Indian Creek, a more pleasant natural setting could scarcely be found. The camp is readily accessible from near-by towns, being less than a mile over a graveled road from Unicoi postoffice and from the concrete highway connecting Johnson City and Erwin.

With the initial gathering together of 400 Tennessee youths, the incidence of measles and mumps indicated the early need of recreation at camp that the necessary quarantine might be pleasurable rather than onerous. This problem was met in the same way, doubtless, as it was at hundreds of camps by the development of an ambitious athletic program embracing baseball, volleyball, wrestling, boxing and horseshoe pitching. Organized mountain climbing and group hikes were encouraged.

Eight hours of trail building or timber stand improvement work was scarcely enough to tap the physical resources of these young men, let alone to fatigue them. A seven-inning ball game after the day's work was the usual thing during the summer. Before the company exchanges had been in operation long enough to afford uniforms, business firms in Erwin and Johnson City generously fur-

nished advertising baseball uniforms in sufficient quantity to outfit three teams. Once the exchanges started dividends, team uniform problems were adequately solved.

Indian Creek was early dammed for a swimming pool, but a heavy rain indicated the need of a stronger dam. The original rock dam was torn out, the creek cleared of rocks for approximately 100 yards upstream, and a six-foot dam was constructed from trees brought from the surrounding forest. The resulting swimming pool, continuously fed by the cooling waters of the mountain stream, was a God-send to summer days in camp and an excellent four o'clock bath tub.

To satisfy the zeal for Saturday occupation—after the swimming pool was in full operation—a second dam was constructed some seventy yards further down stream, and the resulting pool, stocked with fish from the near-by Federal hatchery, was spanned by a split-log bridge a dozen feet in width. With the stream bank turned into a miniature park, this fifty-foot span across the creek became a popular promenade—for men only—for until Frost had painted his way along the creek, no female of the species was invited to view the waterfall, the fish pond, and the sand-bottomed swimming pool.

The camp chapel was constructed in a little grove paralleling Indian Creek at one end of the camp. On a rustic semi-circular knoll a pulpit, made entirely of woven bark and rustic branches, was fashioned by C.C.C. men eager to put newly learned woodcraft to practical use. About the pulpit a two-foot fence of rustic design enclosed a platform area fringed with rhododendrons, begonias and ferns in their natural habitat. The pews were made of huge logs brought in from the surrounding hills. High overhead the maples and hemlocks, their limbs entwining, wove the fabric of the roof. Regular Sunday church services have been made possible through the hearty coöperation of the personnel of the Ministerial Alliance of Johnson City and Erwin, which alternate in furnishing ministers and special music a month at a time.

The first theatre utilized the church pews as seats, a thirty-foot stage was improvised at one end of the pulpit, and gasoline pressure lamps were used for footlights. Here were presented a variety of entertainments from near-by theatres, colleges, civic and church groups. But as entertaining as these can always be, there is nothing in men's camp entertainment to wholly replace the exuberant joy of a local talent production. Many an evening found the men entertaining each other with dances, skits and antics.

Then summer drifted into fall. Field ranges gave way to wood ranges in the new mess halls; the tent city came down and was replaced by eight barracks around three sides of an open court; the hot showers in the new bath houses robbed Indian Creek of some of its glory; the ends of the mess halls transformed into tiny recreation halls by the introduction of a few rustic arches and suitable equipment gave better reading light in the longer eve-

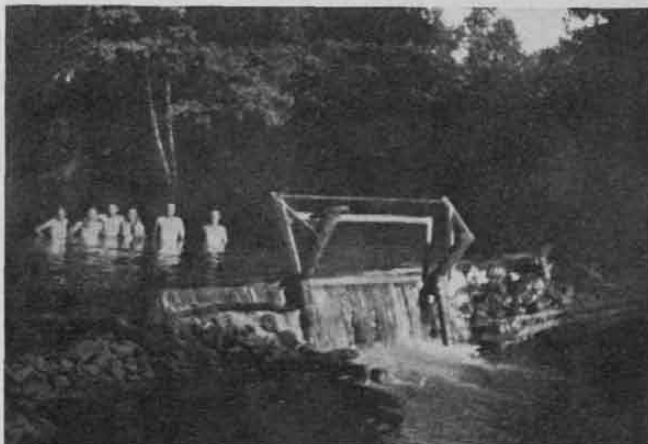
nings; the regular Tuesday and Thursday evening entertainments gradually evolved into educational lectures, some illustrated by colored slides, and some by moving pictures—all well attended.

Classes in Common School Subjects, in Citizenship, in Health and Hygiene and in General Science were organized, with generous voluntary attendance. Shorter days, longer evenings, and lessened call to spend evenings in town, together with the expressed desire of the C.C.C. men for opportunity to add to the structure of their mental equipment, combined to indicate the ripe time for further school building.

There was soon to be talk of school directors for the C.C.C., but before even such talk was prevalent, a timely visit to the camp by Dr. W. B. Boyd of Nashville, E.C.W. Special Assistant for Tennessee, and conferences with him and with Dr. H. J. Derthick, President of Milligan College, brought to light concrete proposals which strengthened the conviction that the time had come for the founding of what the men at Camp Cordell Hull have been pleased to dub the Unaka School of Technology. The classes already organized and held on Tuesday and Thursday of each week were aimed at promoting general intelligence rather than technical proficiency. Men were now desiring further studies, and particularly those conducted in such a way that examinations on completion might be used in securing college or high school credit in the schools of the State.

A survey of the educational attainments of the 400 men in camp revealed that about a dozen had college training. There were about 75 high school graduates and an additional 100 men who had one to three years in high school. Nearly fifty per cent of the men in camp were included in the bracket of those who had completed from four to eight years in graded school work. Those totally illiterate were so few in number as to be quite the exception.

The fact that the welfare building for the camp had not yet been finished emphasized the need of suitable school buildings for class purposes. A survey of those in the vicinity indicated that the one of most value to



The Upper Dam at Sundown

the camp would be the public school building in Unicoi, a mile distant. It was felt that much was to be gained by letting even the building lend a school atmosphere to the classes about to be established.

The School Superintendent for Unicoi County, Mr. Frank Gentry, fell in heartily with the plan for promoting education among the camp men, and approved the use of the desired school building. Mr. Street, principal of the Unicoi School, lent able assistance. Mr. Neal Phillips, president of the local school board, was instrumental in having the building re-wired and adequately heated and lighted, and in having the affable supervisor, Mr. Montague Rhoton, on hand each school evening to furnish supplies and equipment and otherwise to minister to the comfort of the students and faculty members. Professor George E. Stone, Principal of Unicoi County High School, has made available for use the excellent chemical laboratory and facilities at the very modern high school in Erwin.

President H. J. Derthick of Milligan College has been most helpful in suggestions and in concrete assistance in loaning the services of Dr. E. P. Willard of his faculty, Mr. M. P. Shelley and Mr. B. F. Graybeal for conducting courses in Grammar, Elements of English, and English Literature.

Dr. Charles C. Sherrod, President of East Tennessee State Teachers' College, has been very generous in giving of his own time and in making possible the use of equipment that members of his faculty have found a convenient aid in our courses of night instruction. The lantern slides made available through this source have been invaluable as interest aids in several of the courses. Professor Alexander, Principal of the Training School at the Teachers' College, has been a very popular part-time instructor in Geography and General Science courses and has given much time in assisting in plans for the work. Professor Price, of Unicoi County High School, has been conducting a popular course in Biology.

Needless to say, the officers and forestry personnel at Camp have been used to the full, in courses embracing, in addition to those earlier established, Chemistry, Automotive Engineering, Logging and Lumbering, Silvics and

Silvics Culture, Ranger Course, Forest Protection, Wood Products, and Utilization and Principles of Forestry.

Of no small assistance as teaching aids have been the moving picture machine secured through the Forestry Service, the educational films from the Department of Agriculture and the War Department, and the lanterns and slides from the East Tennessee State Teachers' College, Unicoi High School, the Forestry Service and the War Department. A valuable contribution to several of the courses has been made through having men in "quarters" busy themselves in mounting selected pictures from various texts and government bulletins for opaque projection by means of balopticons. The increased interest evinced by the students amply repays the slight expenditure of effort in the preparation of such slides.

The completion of the 52 x 100-foot welfare building at the camp gave increased classroom space for non-credit courses given there, space for which was not available in the Unicoi building. Basketball practice is discontinued two evenings each week during the conduct of classes.

Text books have been secured from various sources: purchases from various second-hand book stores, collected from students in high schools and colleges who donate their used books, furnished by faculty members, selected government bulletins, and a variety of combinations, so that the cost to the individual student has been nil or slight.

Trucks to town for recreational purposes have been discontinued during the four school nights of each week, and transportation is provided for students to classes in inclement weather, and for the away-from-camp faculty members who will accept transportation facilities offered.

Men who attend classes two nights a week, who prepare lessons as required for this attendance, and who have ample facilities for physical recreation provided at camp, seem to be serious minded enough to forego many of the troublesome frivolities that may mar smooth and well regulated camp life. Founded to gainfully employ leisure time of the C.C.C. member and to satisfy his craving for more education, the Unaka School of Technology has a tremendous influence toward eliminating the problem of discipline at Camp Cordell Hull.



THE RESPONSIBILITY resting upon an officer in war is great. Mistakes are paid for in blood. To seek a command in war beyond his capabilities is no less criminal than for a man with no knowledge of a locomotive or railroading to attempt to run an engine of an express on a busy line.—MAJOR GENERAL JOHN F. MORRISON.

A Railroad Artillery Problem

BY CAPTAIN P. LEWIS, 4TH C.A.

THE movement and maneuvers of the two fourteen-inch railway guns of Battery G, 4th Coast Artillery, were conducted under the direction and upon the initiative of the late Colonel L. C. Brown. They furnished types of problems that will likely occur in time of war and are here recorded for such future reference as may be of value.

In contemplating a movement of this nature, certain vital questions arise. A few of these questions are listed below and may be used as a "reminder list":

ADMINISTRATIVE AND TECHNICAL

Has definite authority been received for the contemplated movement?

Has the allotment been made for the railroad travel?

Has special authority been received for expenditure of ammunition (in peace time)?

What immediate repairs and inspections are necessary for the rolling stock?

Has the allotment been made for such repairs?

Who is to be seen regarding such repairs and inspections?

What railroad supplies are needed for the trip?

Who will furnish the necessary gasoline and oil?

POWER PLANTS

Are the power plants in need of overhaul before being subjected to strenuous service?

Are all necessary parts on hand for repair of power plants?

Is a supply on hand of all the various special oils necessary for proper operation?

Do all electric motors and generators test satisfactorily?

CAMP ADMINISTRATION

Camp site selection, latrines, mess.

Mess supplies—rations, water, wood, ice and ice box.

Base-end station personnel, quarters, rations, water.

Water at emplacements for power plants.

Bathing facilities.

Where will ration returns be submitted?

Where and when will rations and supplies be drawn?

How will details be sent to base-end stations? How will they be supplied?

Motor transportation, is any available?

TARGET PRACTICE

Consult any standard "reminder list."

Are all supplies for target practice on hand or can they be obtained?

FIRE CONTROL

Where are base-end stations to be located? (Base line about 15,000 yards).

Are they high enough to see the target beyond 20,000 yards, in any water area?

Where is survey data to be obtained?

Are the supply and rationing at these stations feasible?

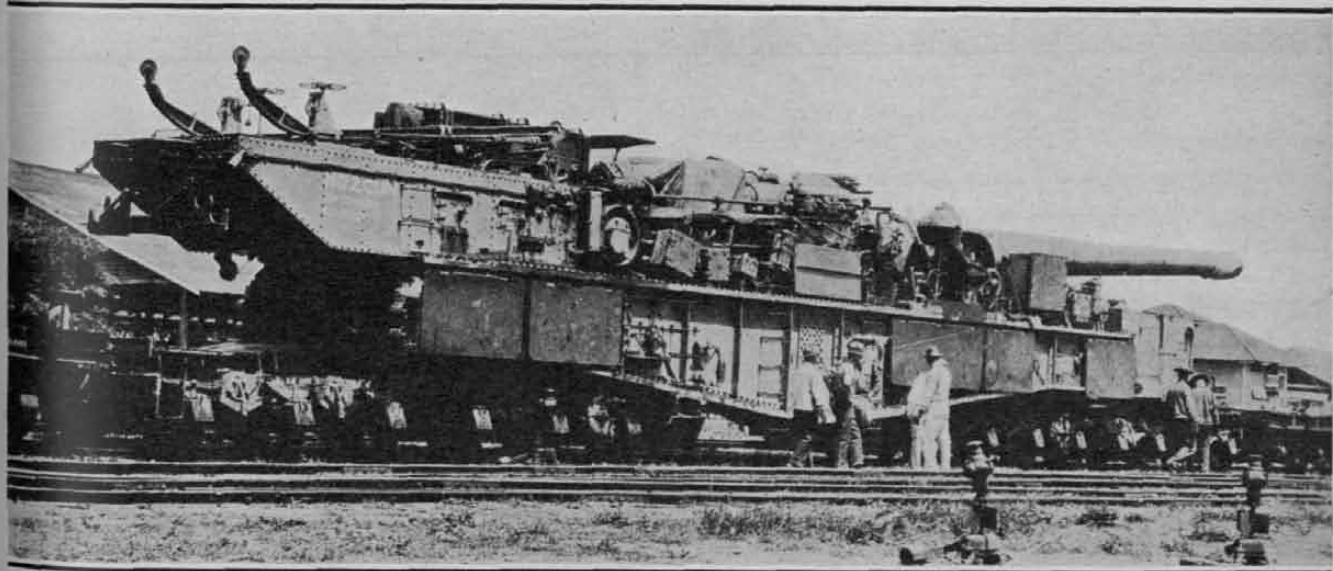
Having tentatively selected the stations, can they be "set up" on the plotting and spotting boards?

Can the proper water areas be seen from these stations?

The same questions apply to subcaliber base lines (peace time) which are necessarily different from the service-base lines.

What communications can be used? How can these be simplified?

What system of spotting is to be used?



Fourteen-inch railway gun on the tracks of the Panama Railroad.



Eight rounds were fired at an average range of 20,000 yards.

If airplane spotting is to be used, what arrangements have to be made with the Air Corps? Do they know our code? What communications are to be used with the plane? If radio is used where is the receiving set to be placed to eliminate dead time?

Anyone contemplating such a trip, including movement, firing and return, could sit down, put on his thinking cap, and evolve many other questions which should be answered before a start can be made. In other words, a definite plan must be made and all needs and unusual events must be anticipated.

The mission of the battery in conducting this march and target practice, is outlined in a letter signed by the District Commander was "for the purpose of determining the time required to move the matériel from its present location at Fort Grant to Fort Randolph and to go into action; also of testing the matériel and fire control installations." It was further proposed to use airplanes alone for both tracking and the conduct of fire, provided sufficient time and airspotting could be made available for training. Although not required by the Office, Chief of Coast Artillery, it was thought desirable to make a complete analysis of the practice so that a thorough knowledge of the firing would be available.

Further missions were considered essential:

To test the reliability of the tentative firing table as regards the time of flight.

To make a close check on the action of the old powder assigned.

To insure the greatest possible accuracy in all elements of fire-control data, to include the accurate aiming and laying of the guns, so that a reasonable armament error and D. A. P. E. might be developed.

To test the stability of the new emplacements, by testing the level of the base ring before and after firing. These emplacements are on ground that was formerly a swamp, and are very near sea level elevation.

To give thorough action tests to the power plants, under strained service conditions. These had apparently not given satisfactory service in the past.

To test the ability of the Panama Railroad installations to handle the complete battery train.

To test the practicability of using the Jackson anti-

aircraft camera for photographing splashes at long range and obtaining deviations thereby.

To give the new plotting car a complete service test.

To give the Stephens spotting board a service test.

A letter was written, requesting the authority and the necessary funds to cover the cost of the railroad transportation. A survey was made of the battery personnel to determine those remaining who had made the trip with Number 2 Gun to Fort Randolph in April 1931. Only one man was found who could provide preparatory suggestions. The report of Major Harold E. Small who supervised the previous trip and the supplemental report of Captain James T. Campbell, the previous battery commander, were of inestimable value in formulating plans. The recommendations of these reports were studied with a view of correcting all deficiencies.

The first step was an interview with the District Engineer to learn the past history of the mounts, emplacements and their installation and to obtain available maps and original survey data for guns and stations both for the Atlantic and Pacific sides. Due to the newness of the battery, little emplacement book data was available. Steps were taken and computations were made so that a complete set of data was available for both sides of the Isthmus. This work consumed a major part of the time of preparation when it is considered that data for two batteries, for major caliber and subcaliber, were obtained from the Engineer surveys. All fire control data were computed by two officers and one master gunner, working independently, so that a definite check was obtained.

The span bolster, which is the large steel casting which supports the gun and carriage in traveling position, had been injured on Number 2 Gun on the previous trip. This bolster, weighing several tons, had to be removed and the defects repaired. The Ordnance Department was requested to make wooden dust guards for all journal boxes. These were made, fitted and installed. The start-



Ready to move.

ing storage batteries were unserviceable. Two new ones were requisitioned and received.

Considerable difficulty had been experienced with the power plants due to the fact that radiation surface was not large enough to keep the cooling water at proper temperature. The power plants for each gun are Sterling six-cylinder motors connected directly to generators which produce 50 kw. power. This power is used through electric motors and a system of Waterbury speed gears to traverse and elevate the guns, to raise powder and projectiles, and to raise and lower the carriage when preparing for railroad travel. For some reason these power plants had a reputation for poor functioning. The motors were overhauled, parts were replaced where needed, and new armatures supplied the magnetos. Their reputation was that they would stall when a heavy load was applied, that they were continually breaking down, and that overheating was their forte. It is true that considerable trouble was had both with the armatures and with the impulse starters. New parts for these had to be improvised and made locally. The water jacket was apparently too small in design to care for proper cooling. The motor is confined in a small place surrounded by a hood of steel plates; the radiator is protected by a steel grill. This steel grill was removed and the simple expedient applied of allowing cool water to flow constantly into the radiator while the pet cock was open at the bottom. The Engineers were requested to install water lines at the Atlantic emplacements to care for this operation.

Technical Regulations concerning the battery were lacking. These were requested but were not received due to the fact that they are still in typewritten form. The Ordnance Department was requested to obtain Galena oil for the journal boxes. Difficulty had been experienced on the former trip with the quality of journal oil supplied due to the heat and to the terrific pressures on the journals of these mounts. Galena oil had been recommended by Major Small and was obtained. New bearings were scraped on a lathe so that replacements would be prepared in case of a burned-out bearing. A hand-scraping job along a railroad track is a tedious and lengthy ordeal.

The tool car for Number 2 Gun was termite eaten. Steps were taken to obtain a new tool car from both the Ordnance and Quartermaster. The loan of a converted box car was obtained from the Quartermaster, who also obtained funds for the repair of the Number 1 Gun tool car.

It was considered advisable to have the running gear of Number 1 Gun, (this gun had not made the previous trip), inspected and overhauled by the proper shops of the Panama Railroad. The superintendent of the car shops was interviewed and the necessary funds were requested from the Ordnance Department.

From conferences with the shop officials it was learned that the running gear and the air-brake systems of passenger equipment of the Panama Railroad are overhauled every six months and the freight equipment is gone over

once a year. The leather and rubber washers in the system deteriorate rapidly and corrosion of parts makes this necessary. It was determined to have all rolling stock of the battery inspected and overhauled. After a few conferences it was found that the original estimate should cover the cost of the entire overhaul. Due to the fact that the span bolster was being repaired, the overhaul of Number 2 carriage had to be accomplished at the emplacement. The rest of the equipment was taken to the railroad shops. On the previous trip considerable difficulty was encountered with journals overheating. It was found that the brake shoes were actually bearing against the wheels of these particular journals. The old shoes were removed and thinner ones installed, leaving the proper clearances.

A road test and exercise were given Number 1 Gun. During this test the air-brake line, which runs along the lower part of the carriage, was cut in two. Upon examination it was found that the forward spring shackles were too long to allow proper clearance on sharp curves. This happened just prior to the trip and hurried estimates were obtained from several sources as to time and cost of the proper interchange of shackles. Work started immediately and continued without regard to hours until completed by the Ordnance machinist, assisted by an enlisted detail.

Several conferences were held with the Superintendent of Transportation and the Master of the Road of the Panama Railroad with references to the make-up of the train, road clearances, capacities of bridges, and costs of the round trip. A certain amount had been allotted for the trip, but after an informal conference with the railroad officials this charge was reduced several hundred dollars. In addition to the actual cost of the trip, they agreed to do all the necessary switching at both ends, the spotting of the cars in advance for loading, the spotting of the baggage car at Fort Randolph for the entire maneuver period, the furnishing of an additional passenger car, and the necessary turn-around of the guns. It was decided that the train should be made up as follows to allow for distribution of bridge loads:

- 2 locomotives
- 2 flat cars, steel underframe
- 1 Gun, No. 2
- 2 flat cars, steel underframe
- 1 ammunition car
- 1 powder car
- 2 flat cars, steel underframe
- 1 Gun No. 1
- 1 flat car, steel underframe
- 2 tool cars
- 1 plotting car
- 1 box car, baggage and mess equipment
- 2 passenger cars
- 1 caboose

THE TRIP

Two switch engines from the Panama Railroad arrived



Camp of Battery G, 4th Coast Artillery, at Fort Randolph.

at Fort Amador to take the two guns to the Balboa Yards, for the make-up of the train. It was thought necessary to turn each gun around on the Balboa "Y" so that it would be in proper traveling position. Due to the lack of proper turn-around facilities on the Atlantic side it was found necessary to make up the train with the muzzles leading. Extreme care was taken to check the lateral movements of the guns on sharp curves and little or no lateral movement of the muzzle was noted. The engines completing the task with the guns, returned to Fort Amador for the remainder of the train which had, in the meantime, been loaded, with all personnel aboard. The entire train was assembled in the Balboa Yards. Several stops were made en route to allow for the passage of regular railroad traffic, and opportunity was taken at these times to examine journals and other moving parts of the carriages. Loose packing in the journal boxes was rectified and on one occasion "hard locomotive grease" was applied to a box that gave indication of becoming too hot.

It is well to mention here that one of the difficulties of the previous trip was overcome on this trip, that is the scarcity of water and food. Each car, in addition to the regular water coolers built into the cars, was equipped with a five-gallon boiler of ice water. Also each gun was supplied with a Lister bag suspended beneath the carriage. The lunches were prepared before departure, kept in the supply car, and were distributed at the proper time under supervision of the Mess Sergeant.

Since so little trouble was encountered on the trip that our arrival at Fort Randolph was far ahead of schedule, it was decided that the actual emplacement of the guns should be delayed until the next day. Camp was pitched on a site that furnished excellent shelter from the wind and provided toilet facilities for the men as well as water connections for the mess.

The next morning the guns were emplaced, powder was removed from the car to a cooler place, plotting car cables were connected, instruments set up, and all phones checked through to the telephone switchboard. A con-

ference was held with the commanding officers of Fort Randolph and France Field covering the following subjects: cooperation between the Coast Artillery and the Air Corps, equipment and personnel needed for the air spotting, qualifications of personnel, future conferences needed, limitation of spotting equipment, planes available, and the number of spotting teams to be trained.

It was decided that the teams should meet with the Battery Officers for a conference at Fort Randolph. At this latter conference a complete explanation was given the air officers of our system of clock spotting, pointing out its limitations and its advantages. Most of the officers present claimed to have spotted overs and shorts and desired to continue their system. Diagrams were drawn to explain the difficulties of parallax in giving erroneous sensings as to overs and shorts and also the difficulties for the observers to know accurately the gun-target line. The code was explained, which also differed from the one they had been accustomed to use. It was pointed out that their spottings would be used in their entirety for both range and direction corrections for both subcaliber and service firings. It was also determined that the Air Corps should furnish its own radio communication and that the receiving set should be placed in the plotting car as an integral part of the battery spotting section.

After manning one of the subcaliber base-end stations it was found that a part of one water area could not be seen from that station. A new station had to be selected and new data computed. No particular difficulty was encountered in the manning of the service base-end stations. It is considered inadvisable to state their location and the manner of reaching them, in this article. It is unfortunate that this maneuver took place during the annual maneuvers of the Harbor Defenses of Cristobal due to the lack of sufficient boats for towing and the fact that we were forced by circumstances to use a subcaliber base line during the actual maneuver period. The men worked at night on Harbor Defense maneuvers and during the daytime preparing for target practice.

Numerous subcaliber firings were conducted and kinks of the air spotting system were rectified thereby. The Air Corps officers desired not to use the 32-division clock system of spotting, due to the difficulty of their visualizing the 32 divisions from the air. It was found impracticable to adjust laterally with the 12-division clock system, at long ranges. A slight error of judgment in the "hour" if the shot were near the gun-target line would cause a large error in adjustment. It was decided to use an "X" in the code to designate "half hours" thus giving a 24-division circle. A grid was made to assist the air spotter in visualizing the clock from the air but this was discarded as impracticable. The air spotter controlled the plane and operated the radio and had no additional hands with which to hold the grid.

A sergeant was trained to operate the fire-adjustment board for range corrections and a corporal operated a similar board for lateral corrections. Dead time was practi-

cally eliminated from the time splash occurred until it plotted on the fire-adjustment boards.

All powder was weighed, checked and sized. Quarter-charge cans were assembled and marked so that all full charges were of the same weight. Projectiles were weighed and filled to the exact amount. Orientation data and fire control data were re-computed, guns were re-oriented and re-clinometered. The powder was not placed near the guns until just before firing; electric primers were tested for size, continuity and resistance.

In that all firing of this battery is Case III, a safety check was borrowed from mortar fire. Parallax tables and charts were computed for the B. C. Station and all set-forward azimuths were telephoned to the B. C. Station where they were corrected for parallax and set on an azimuth instrument. At the end of the time of flight, as noted on a stop watch, the target should cross the vertical wire of the B. C. telescope. Several checks were made on each occasion before commence firing was given.

Eight rounds were fired, four trial shots and four record shots at an average range of 20,000 yards, obtaining two bow-on and two broadside hits.

After the practice the level of the base rings was again checked and it was found that the firing had, in no way, disturbed the emplacements. The guns were put in traveling position, camp was broken, all cars were packed, and the battery was ready to move that afternoon. In order to make the return trip during daylight hours the departure was delayed until the next morning.

The return trip to Fort Amador was without incident, except that different speeds of travel were tried for short stretches. The speeds varied from fifteen to twenty-eight miles an hour without any noticeable effect on the running gear.

CAMERA OBSERVATIONS FOR IMPACTS

In order to determine the feasibility of using the Jackson Anti-aircraft Camera for determining deviations, at comparatively long ranges, the camera was mounted at the B. C. Station, on an azimuth instrument pedestal and was operated by Staff Sergeant Conklin. The range was over 20,000 yards from the B. C. Station and the visibility was very poor. However, extremely gratifying results were obtained. From the film, the following advantages were obtained in preference to visual lateral observations: The camera is able to detect the first sign of a splash and a reading is made accordingly, whereas the visual observer must wait until the splash has developed and the target has passed beyond the original point. The camera deviations, by enlarging the projection screen, read to one-tenth of one mil. which is about two yards at the ranges used, whereas the best results that could be expected from an azimuth instrument, by halving the smallest graduation on the spotting scale would result in a reading accurate to only ten yards at the corresponding range.

The errors introduced by visual spotting are:

(a) Few observers read close enough, as the graduations on the spotting scale of the azimuth instrument are five-hundredths of a degree.

(b) There is great difficulty in determining the exact edge of the splash.

(c) There is a decided movement of the target from the time the splash occurs, until its full development.

In this practice, had the visual lateral deviations been taken as final, we would have missed both bow-on hits and consequently the score would have been reduced by 24.5 points. By visual observations, one shot missed the bow-on target by only nine-tenths of one yard. The visual lateral deviations are decidedly unfair to the careful battery commander. All his data are checked to three decimal places and the final determination of his hits is not within twenty yards of accuracy, which is greater than his lateral probable error.

To show how the target travels during the development of the splash, on the third record shot, the camera plot was left 1.8 yards, whereas the visual spotter gave right 16.9 yards. This was in no way due to carelessness on the part of the visual observer, but was due to the inherent inaccuracy of the visual system. The average of visual spots was about 15 yards greater in the direction of travel than the camera spots.

TIME OF FLIGHT

There had been some question in the minds of those concerned whether the times of flight as recorded in the provisional firing tables for the 1,200-pound projectile, were accurate. We also determined to find, as closely as possible, whether the actual time of flight corresponded to the range table elevation for the range actually fired or to the range of the actual splash. It was requested that two officers equipped with tested time-interval recorders take the time of flight. The table shows the results.

Shot	Range at which laid yards	Actual average time seconds	Range table		Range of splash seconds	Range of splash yards
			Time flight seconds	Range fired seconds		
1-TS . . .	19,010	25.1	25.9	23.3	23.3	17,548
2-TS . . .	20,110	27.1	27.9	24.7	24.7	18,337
3-TS . . .	20,400	27.7	28.4	26.1	26.1	19,134
4-TS . . .	20,410	27.6	28.4	26.1	26.1	19,094
1-RS . . .	20,450	28.2	28.5	26.2	26.2	19,142
2-RS . . .	20,520	28.2	28.6	26.2	26.2	19,328
3-RS . . .	20,540	28.3	28.7	26.1	26.1	19,106
4-RS . . .	20,600	28.1	28.8	26.2	26.2	19,156

The firing tables were computed for powder developing 3,000 ft/sec. muzzle velocity, and it was known from previous firings of this powder that muzzle velocity varying from 2,815 to 2,900 ft/sec. could be expected. It was further believed that the travel chart should be changed to use the elevations actually set on the guns, as an argument, rather than the range to the set-forward-point from the plotting board. It may be seen from the table that, by using the elevations actually set on the guns, as an argument, the times of flight actually obtained correspond closely with the range-table values.

AIRPLANE SPOTTING

To have successful airplane spotting, there must be

complete understanding and coöperation between the two arms. The commanding officer of France Field co-operated to the fullest extent and the officers detailed by him had a complete understanding of the problems and their duties. The Air Corps communication detail was placed in the plotting car and there was no lost motion between the receipt of the code messages from the plane and their application to the data sent to the guns. After the "half hour" system of spotting had been adopted, uniformly reliable results were achieved. During the record practice the average range error of the air observer was 45 yards while the lateral error was 33 yards. This compares with the Stephens spotting board of range error 18 yards and lateral error 23.5 yards. Using a *trained* observer, there seems to be little choice between air and ground observations for adjustment. The lack of time and lack of knowledge as to just what this battery would be required to do during the Atlantic Side maneuvers precluded the use of airplane tracking.

THE SCORE

It is not known what weight is given the score in the annual rating of batteries of Coast Artillery. It is known, however, that a battery commander finds it difficult to keep from shooting at the score, rather than shooting at the target. In this practice, the battery commander had no score to worry about and as a consequence bent every effort to obtaining reliable information from the

firing. The resulting score was satisfactory, computed as 104.4, but a better score might have been attained had it been the primary objective. For example, "Commence Tracking" would probably not have been given when it was, had there been a competitive score; certainly firing would have been held up under the conditions of haze and rain. The B' observer was tracking on the bow spray in front of the target, the target being invisible to him. One delay was caused, due primarily to the obscuration of the target by the haze. This would clearly be an allowable "time out" were we firing under target practice conditions. Had time out been allowed the score would have been increased by 4.3 points. Again, had the camera for lateral deviations not been used, the score would have been reduced by 24.5 points. The fact is brought out that this score might easily vary from minus 24.5 points to plus 4.3 points for reasons over which the battery commander had little control. The question arises, as it has for many years—does the score picture in any way the tremendous amount of care and precision effort used by any battery commander in preparation for his practice, when probability is based on so few shots?

Unfortunately many of the interesting problems and their solutions, as learned from this maneuver, are of a confidential nature and cannot be discussed in this article. Suffice it to say that much valuable data was obtained for future use.



SINCE 1496 B. C., a period of 3429 years, there has been 3161 years of war, either local or international, with less than 268 years of complete peace. From 1500 B. C. to 1860 A. D., 8,000 treaties, local and general, and solemnly declared to be everlasting, have been concluded. These treaties on the average lasted two years.—
THE COLUMBIAN.

Care of .50 Caliber Machine Guns

A Model Storeroom

By CAPTAIN A. W. WALDRON, C.A.C.

INCIDENT to a recent material inspection at Fort Shafter, the condition, care and storage of the .50 caliber machine guns assigned to Battery "I," 64th C. A. (AA) was most favorably commented upon by General R. S. Abernethy, Brigade Commander. At his direction this article, with accompanying photographs, has been prepared in the hope that the result of our experience may be of benefit to other Battery Commanders (assigned to this type of armament) in the solution of their problems.



Figure 1

Showing bays with panels removed. Lower doors open showing adapter cradles partly drawn in one bay, the other bay with cradles in normal position.

Due largely to the efforts of the Regimental Commander, Colonel R. H. Williams, on December 1, 1932, the regiment was reorganized to more nearly conform to the standard antiaircraft regiment, having in mind the war mission for the adequate defense of the Island of Oahu. The regimental organization now in effect has two battalions, each consisting of two 3" gun batteries and one 60" searchlight battery; and one battalion of two 3" gun batteries and one .50 caliber machine gun battery.

Upon the reorganization of the regiment and the subsequent organization of Battery "I" the immediate need of storage facilities for the twenty-four .50 caliber machine guns with their numerous accessories became a serious problem.

The only available space was an old unfinished storeroom under the main barracks building with a floor space of approximately 20 x 20 feet. Salvaged lumber was used to build six compartments, each holding four guns, or the equipment of one section. Ample room is provided for one section in two superposed bays. The

upper bay is used for guns, tools, oil cans, buffer oil containers, ramrods, etc.; while below are stored loading machines, tool boxes, adapters, etc. It is to be noted that each gun cradle pulls out of the bay on rollers, allowing the vertical display board, upon which are arranged all parts of the field-stripped gun, to be inspected. Each gun has one spare barrel; the two barrels are arranged horizontally above the gun. A 40 watt light is concealed behind a baffle in such a way that the light is reflected into the bore of the barrel. By this means it is possible for an inspecting officer to see at a glance all principal parts of the gun and the condition of the bore.

In the lower part of the bay, loading machines and tool boxes containing spare parts may be readily inspected without removal. Fig. 1 shows lower doors in open position.

The tripods are folded and stand vertically in rear of room on a low bench.

After completion of the rough construction the entire room was sealed with "Canex" (a local preparation manufactured from the residue of sugar cane, and resembling beaver board), base boards and strip finish were added; the floor sanded and covered with ordinary roofing paper, painted black. Removable panels and doors were then added to the gun bays, being constructed of three-ply veneer and varnished.

The finished room presents a striking appearance not only to the observer but in the use of the limited space available; in fact had anyone suggested at the outset that all the equipment on hand could be stored in one small room we would have doubted his judgment. From the



Figure 2

Showing close-up of one bay, guns Nos. 3 and 4 being shown in inspection position (field stripped) while two guns Nos. 1 and 2 are in condition to be removed from Machine Gun Room by gun crews and taken to drill. Note that all gun bays are tactically numbered above the gun. Not shown are card receptacles in each bay (on uprights behind parts display board) showing all data given in gun books.

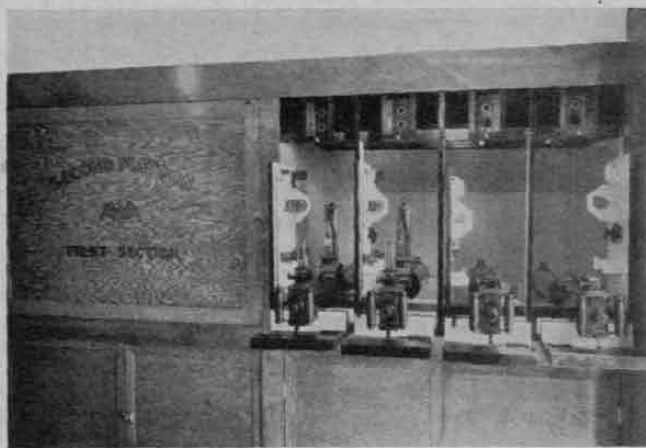


Figure 2

Showing close-up of one bay, guns Nos. 3 and 4 being shown

basic idea a gradual development proceeded, the results, I think, being a surprise to the designer.

The entire burden of accomplishment of this work was borne by seven men of the battery. To these men great credit is due for a duty well performed, especially when considering the material at hand.

Materials purchased (other than "Canex" furnished by the Q. M.) amounted to approximately \$20.00, to include veneer, varnish and small brass hinges, knobs, light fixtures, etc.

I believe the results obtained fully justify the effort, besides there is the satisfaction of having a model Machine Gun Room.

Military History: A Definition

By LIEUT. COL. ROBERT ARTHUR, C.A.C.

IN recent years there have appeared in the United States three books to which the title "military history" has been attached. These were all prepared with the same objective in view—an objective which necessarily restricted the scope of the work. The authors therefore admit the inadequacy of their respective volumes in the general field of military history in that they qualify their titles by calling their books an "introduction" to the military history of the United States, an "outline" of our military history, or a "condensed" military history. Although their methods of treatment differ, the three authors cover the same field of American history in somewhat similar fashion, indicating that they have the same conception of the term "military history."

In the same field, covering much the same ground, are other and older works which are not labeled "military history," as, *American Campaigns*, *Battles of the American Revolution*, *The Military Policy of the United States*, and *The History of the United States Army*. Without doubt, these books, as well as those first mentioned, all pertain to military history, but are they military history? The tail is a part of the dog, but it is not the dog itself. In our current publications made in our instruction in military history in the Reserve Officers' Training Corps, are we presenting the dog in whole or have we only a single anatomical member which we present as the dog?

Some fifteen or twenty years ago, the Hon. J. W. Fortescue, a lecturer in military history and an author of renown, sought an answer to this very question. He hit at once upon the reply which would be made by the great majority of men, whether military or not, to the effect that military history is a history of wars and warring. This is apparently the conception of our recent authors, and it leads inevitably to a need for a definition of war.

Unfortunately, there are almost as many definitions of

war as there are authors on the subject. The classic definition will follow somewhat after Clausewitz, who pronounces war to be "an act of violence intended to compel our opponent to fulfill our will." Since this definition makes war out of prize fights, duels, and riots, we turn to Von der Goltz and find that war is "a bloody encounter of nations, in which each contending side seeks the complete defeat, or, if possible, the destruction of the enemy." Under this definition, a revolution or a rebellion is not war, nor can a nation fight a purely defensive war, seeking only its own self-preservation. The dictionary is wordy but more comprehensive when it defines war as "a contest, as between nations or states, or between different parties in the same state, carried on by force and with arms . . . usually prosecuted by the slaughter or capture of troops and the seizure of ships, towns, and property." This definition seems to include riots and strikes as acts of war. Fortescue himself preferred to look upon war as "an instrument of policy for the imposition of the will of one community upon another by force of arms," and we must admit that the definition is not a bad one. At least, it contemplates the possibility of a state of war without actual combat—the imposition of the will of one community upon another by a show of force.

In any case, we know approximately what these definitions seek to define, so perhaps we had better adopt Colonel Spaulding's definition: "War is war," and let it go at that. War is war, involving armies and navies, alarms and excursions, battles and sudden death. It begins with a declaration that a state of war exists or with a conflict between armed and organized bodies of men; it ends with a declaration that a state of peace exists or with a cessation of hostilities and with the partial or complete disarmament of one or both combatants. War follows peace and peace follows war. The boundary line between

the two is a narrow one which admits of no third condition. A history of wars and warring is therefore a history of those periods in the life of a nation during which a state of war exists. Is military history no more than this?

Does Miltiades, son of Cimon, begin and end at Marathon as a factor in Greek military history? Does the military history of Rome, in so far as Carthage is concerned, come to an abrupt pause with the withdrawal of Scipio's armies from Africa? Does the military history of England exclude the period of Roman occupation? Has the withdrawal of France from Mexico no place in the military history of the United States? Is the military history of modern Europe complete without reference to the recent economic crises of the nations of that part of the world? What about the seizure of European strongholds on the Chinese coast, the publication of the Monroe Doctrine, the occupation of Cuba, the occupation of the Rhineland, the establishment of Panama as an independent state? In truth, it would appear that military operations in time of peace and the peace-time consequences of war-time operations cannot be excluded from military history.

We come then to the following definition: The military history of a nation is a history of the operations of the land and sea forces of that nation, whether pro- or anti-governmental, and the direct results of such operations, both in time of war and in time of peace. We thus admit rebellion and revolution to military history, and we eliminate strikes and riots unless they become so serious as to involve troops maintained by the nation, in which case they take upon themselves the character of a rebellion. We do not omit peace-time activities of the army and the navy of the nation, nor do we omit the direct results of war.

Conceivably, we might eliminate the term "direct" in admitting the results of military operations to military history, but to do so would so broaden our definition that practically the entire history of the nation would become its military history. Nations are born in war and they die in war. Their forms of government result from war, and their artistic, commercial, educational, psychological, philosophical, and political developments are made possible through war. Indirectly, the success of General Washington's armies more than a century and a half ago made it possible for Mr. Roosevelt to become President of the United States, but his election is scarcely a matter of military history. That English is being taught in the public schools of the Philippine Islands is an indirect result of the war with Spain, but that, too, is not an item of military history. On the whole, then, military history should be restricted to include only the direct results of military and naval activities.

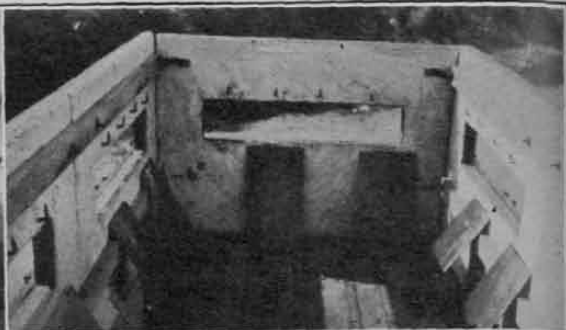
It does not follow that the history of the army and the navy thus becomes the military history of the nation, for neither the army nor the navy is involved in many of the direct results of military and naval operations. Were such limitations to be imposed, Sheppard's *Short History of*

the British Army and Ganoe's *History of the United States Army* would lack only the naval operations to become military histories of their respective nations, when in fact they are only what they purport to be and omit many features of military history. Taking an example from the United States, the expansion of that country to the westward was made directly possible by the Army through explorations, warfare with the Indians, establishment of territorial governments, protection of railroad construction, and police and control of the territory. Much of this expansion has no place in the history of the Army, but most of it has a definite place in the military history of the United States. The acquisition of the northwest corner of the United States without combat was a direct result of the Lewis and Clarke expedition and belongs to military history, but the expedition alone belongs to the history of the Army.

Figuring, then, from the basis of our definition, of what does the military history of the United States consist? What should be included in a book or a course of instruction on the subject? First, of course, comes the military and naval operations of our recognized wars, together with the immediate results of such operations, such as expansion of our national boundaries, increase in the public debt, increased contacts with and responsibilities toward other nations, the shift of trade incident to the war, and the inevitable depression that follows every major war. Second, we must include the development of the military and naval forces from legislative, administrative, organizational, logistical, and tactical points of view in order that we may interpret the military and naval results. Third, we should trace the growth and improvement of ordnance, transportation, and equipment in explanation of organization, logistics, and tactics. Fourth, we have the minor military and naval operations, as Indian warfare, punitive expeditions, and non-aggressive occupation of foreign territories. Fifth, there are the peace-time non-military activities of the armed forces of the nation which affect its well-being, such as the extension of railroads in the West, the installation of communication systems in Alaska, the construction of the Panama Canal, the investigation and control of yellow fever, the conduct of the Civilian Conservation Corps, river and harbor improvement, etc. Finally, and in connection with all the preceding factors, we must take into consideration the influence of military and naval operations and activities upon the economic and political development of the country.

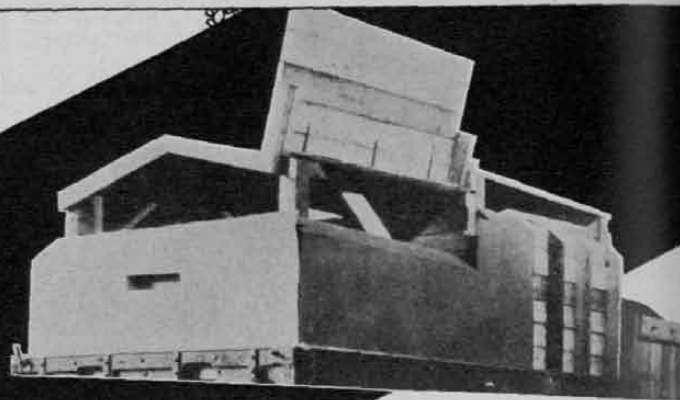
Given all these factors, we have a military history of our country—our dog is present with all parts accounted for. Without all, some part of the dog will be missing. It may be the tail, which can be spared without too great inconvenience, but we should take great care that it be not some other member, without which our dog would be woefully incomplete. So far, no one has completely assembled the dog; and the military history of the United States still remains to be written.

Improvised Mobile

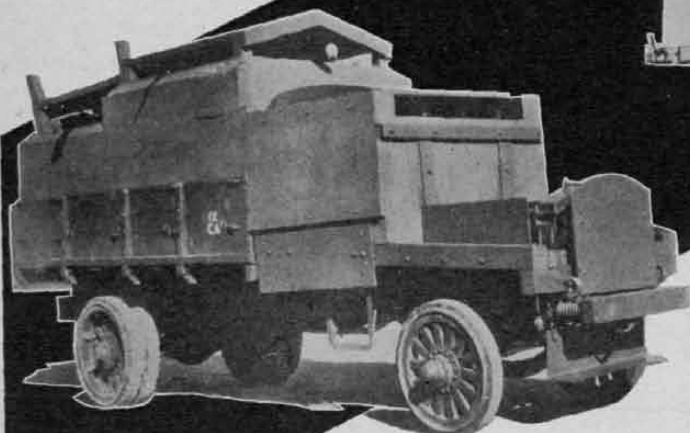


Reinforced concrete slab, 3" thick and bolted in place, protect driver, motor and crew. The weight, with three machine guns, is 9,700 lbs. All-round fire is provided, and the bullet-proofing is easily constructed of common material. Exposed differential and the time required for construction are disadvantages.

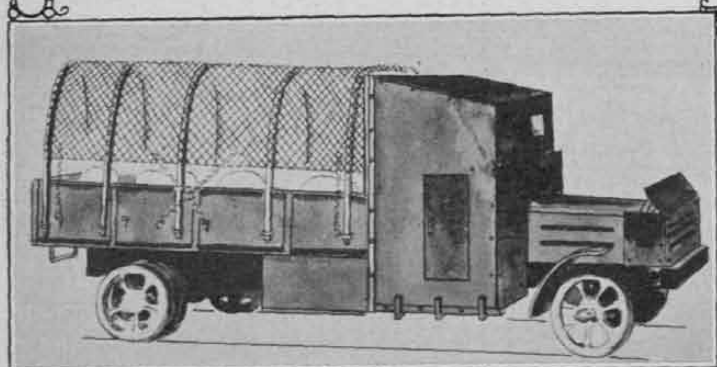
The bullet-proofing material of the truck shown below and to the right consists of two compartments of heavy double timber frames filled with 4" of crushed rock. Motor and radiator are protected by $\frac{3}{4}$ " iron plates. The nest carries a crew of 8 men and weighs 9,910 lbs.



Another view of nest at left. There are no facilities for firing upward, the differential is exposed, and time is required to construct. There is 3-way fire for the rear machine gun.

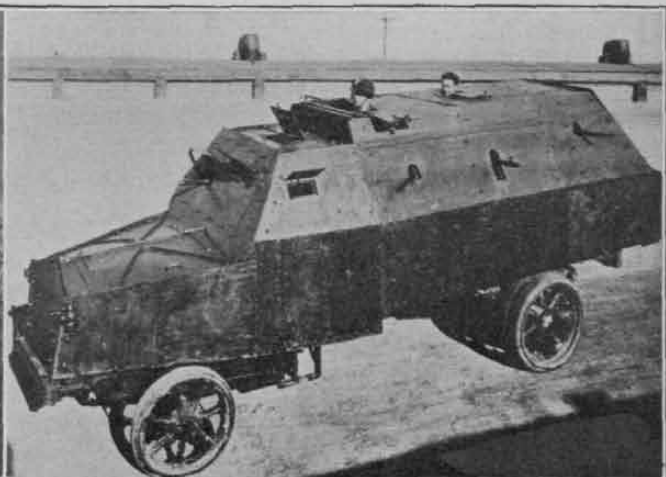


Boxing inside truck holds 7" of sandbags in nest below and at right. Wire mesh top gives protection from missiles but no concealment. An automatic rifleman sits beside driver.



These photographs of improvised machine gun nests, constructed in the Ninth Corps Area, are published for the information of post commanders in the event that an emergency should arise requiring such vehicles. In all cases the parts making up these nests may be dismantled and stored nearly intact, making reassembly easy.

Machine Gun Nests

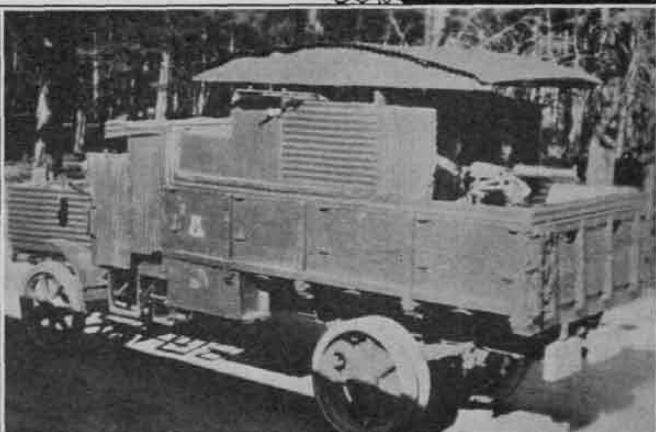
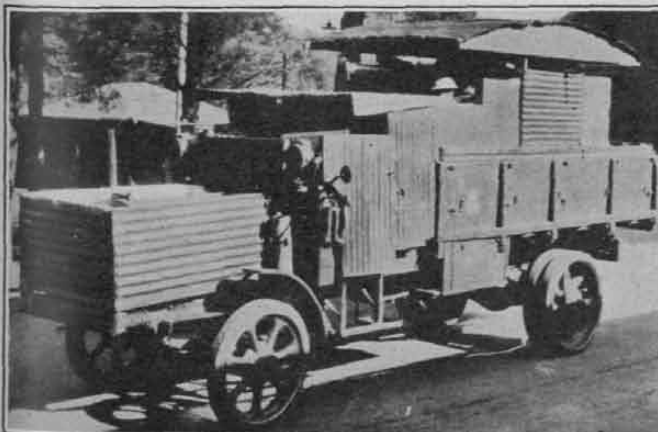
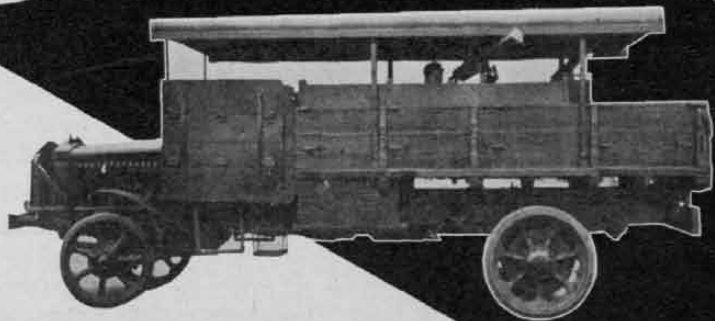


Boxing inside this truck holds in place 5" of dry sand, while $\frac{3}{8}$ " and $\frac{1}{2}$ " armor plate protect the driver. With 4 machine guns mounted on pedestals, the nest weighs only 3,460 lbs. Gunners' heads and flanks of motor are unprotected.

Double $\frac{3}{16}$ " steel plates, $1\frac{1}{4}$ " apart, bolted to steel frame inside truck, give complete protection and concealment for above nest. Single plating is used overhead. Three air-cooled machine guns on pedestal mounts have all-round fire. An automatic rifleman sits beside the driver. Weighing only 8,280 pounds, and easily removed and assembled, this nest is excellent if material is available.

Two corrugated metal sheets set 2" apart, and the space filled with concrete, form slabs that are bolted in place to bullet-proof the nest shown below. The total weight is 3,000 lbs., nest may be installed by 4 men in 25 minutes. The corrugated iron prevents concrete from shattering and gives satisfactory protection, but the differential, transmission and rear gunner are exposed.

There are no facilities for firing upward.



Officers I Have Known

BY MAJOR SAMUEL T. STEWART
Retired

IF I were a young officer starting in the service, the title of this article would be the caption of a book I would start. It would be a roster of the officers I met and the circumstances attendant upon that meeting. Possibly, I would have a double entry, one the alphabetical such as "Capt. Richard Smith, Med.O., Fort Monroe, 1/18/34," and the other locational, such as "Fort Monroe, 1/18/34, Capt. R. Smith, M.O.; Maj. Charles Green, Adj.; Gen. George Davis, C.O.," or "33-34 Battery Officers' Class," followed by a roster of the class taken from the program.

Such a record gathered through the years would be different from a diary through which one would grope to find the dates and facts; besides this diary is sure to be at the bottom of the storage chest when wanted. My book would enable me to look over the roster when I arrived at a new station, and when someone asked, "Do you know Major Green?" I could reply, I have the pleasure—Fort Monroe, 1933."

Three years later it would help me remember that the General liked officers to take front seats at an assembly and have paper and pencil at officers' call. In later years, when in command of a regiment ordered to expand for an emergency, I would know whom to pick from a list of possibilities for assignment to my organization.

We may think on a given date that we will never forget the happy bunch which played poker around the table at Battery Officers' Course, or the friend who tipped us off to the proper solution of a knotty problem, but one meets many men in the course of a career and moves to many places. New names and faces overlap the old.

Seeing a face in the club or on the street above civilian clothes, one finds himself saying, "I ought to know that chap, when have I met him?" If there is time to conjure up memories he is placed, but sometimes it is not until far in the night that one remembers him; for the kaleidoscope of the mind is a funny thing, often it is like a stereopticon—one has to have the right slide before the lens. You may meet many Joneses, but in later years, when the wedding invitation arrives, you wonder which one of them belongs to the name engraved thereon. The little book helps you check up.

Then comes the time when you are on Organized Reserve duty. In walks the president of the largest contracting firm in town. He greets you like a long-lost friend. His name and face are vaguely familiar but you cannot place him to save your neck. By being diplomatic you get a chance to peek into the book and discover that

Hints for compiling a handy reminder of persons worth remembering.

he was a lieutenant just out of Plattsburg, who served with you for a few months at the beginning of the war. You have forgotten, but he remembers that you taught him many things and give some fatherly advice to a lonely young man. You were a regular and his model in those days, and all of these years he has kept a warm spot in his heart for you and watched your name in orders. Good thing to place him!

A record of prominent civilians is also worth considering, particularly by location. In these days of D.O.L. the time will come when a memory refresher will be welcome. Ordered back to the same locality after a lapse of a few years, it is a great help if one has a list of the prominent men with whom he came in contact on prior tour of duty. The ability to renew these contacts may be very valuable. Even the youngsters in C.C.C. will in turn become solid citizens and their acquaintance may mean much to you. National Guard officers become very fond of the regular, as do R.O.T.C. students. They change, grow up, and potentially worth-while friendships can be easily lost in the haze. Then too, there is the ever-present possibility of reduction of commissioned personnel, or resignation to go into business, where every acquaintance means added good will.

Retirement comes and one is prone to talk and dream of the old days. It will be pleasant to be able to look into the book and verify dates and names of comrades in some exciting or interesting adventure. An argument with the family as to whether there were three or eight generals at the dinner at the Moanna results in a look in the book and the question is settled to the satisfaction of all.

Even the ladies may find the idea of use. Princess Alexandra Kropatkin, in a recent number of *Liberty*, recommends five lists: "(1) Nice people I have met, (2) Good ideas I have heard, (3) Nice places I have been, (4) Good jokes I have laughed at, and (5) New dishes I have enjoyed."

You may not need to look at the book to remember which general liked paint on the engines of your motor vehicles, which one inspected to see if garage doors were closed, which one acted as his own police sergeant, or which one was death on firewater; but time rolls on—the grandson has your sword—he has your book—he tells his chums, "My grandfather knew Pershing, MacArthur, Sumerall, Bullard; see, here it is."

Yes, my advice is, "Keep your little book."

A Trip to Baguio

By LIEUTENANT ROBERT J. WOOD, C.A.C.

IF you manage to get through the Plaza Goiti and on to Avenida Rizal, you need only drive straight north and continue to follow the main highway to eventually cover the 260 odd kilometres and arrive in Baguio. It is an excellent road, considering the country, the difficulties that attended the building, and the climate to which it is annually subjected. It would be classed as a good road in any country.

We left Manila early one morning and drove leisurely through the provinces of Rizal and Bulacan into Pampanga, where we made a stop at Fort Stotsenburg, about 60 miles from Manila. This part of the Island of Luzon is fairly well populated, and is well dotted with small towns and barrios, which give one the impression that they are trying to encroach on the highway, barely leaving enough room for two cars to pass each other. The native chauffeur makes the most generous use of his horn, in fact he seems to think that sound is the only necessary safety measure, and the American who would clear the road of pigs, chickens, caribaos and children would do well to emulate his example, for it is the only signal understood.

Between these centers of habitation lie fields of rice and sugar cane. The taos rise early and, attaching a cart to the caribao (the household pet and beast of all work) proceed with the whole family to the fields. If it is far they may not reach their place of work for several hours, for a caribao geared in normal cruising speed covers barely two miles an hour. This does not seem to disturb the tao, who is endowed with that typically oriental outlook which often infuriates the efficiency-loving American, namely: "Time is of no consequence." Experience will soon prove that this is a good rule for the tropics.

Naturally these slow moving vehicles—the caribao carts with their solid wheels, as well as the omnipresent and faster carromata, a two-wheeled passenger vehicle drawn by the undersized, but sturdy, native pony—tend to retard more modern transportation. The delay is not long and the first 60 miles can be covered easily in two hours and a half. Nearly half of this distance, that lying in the fertile province of Pampanga, is over as beautiful a concrete road as the States afford, complete with excellent culverts and a black line down the center. The remainder of the way is surfaced with asphalt, tar, or simply gravel.

Leaving Fort Stotsenburg, one travels through similar country for another 50 miles, and then the landscape begins to change rapidly. The torrid lowlands gradually give way to hills, and we soon find ourselves climbing mountain roads leading ever upward. The road is well graded and sited, and we look overhead to towering peaks and down at deep ravines and gulches beneath us. The



"... Proceed with the whole family."

palm trees give way to pine; the scent of which is all around us, and we are glad to empty our lungs of the dusty, sultry air of the lowlands and refill them with this fresh and healthy atmosphere.

These hills remind one of the Blue Ridge mountains. Of course the people seem different, their bare legs and brown bodies appearing strangely out of place to one with a States' picture of mountain peoples in his mind.

The people here, however, have only a skin coloring in common with those of the coastal provinces. The first we see are women, squatting along the roadside making small rocks out of big ones; they are small but compared to the generally weak and flabby look of the lowlanders, are robust and muscular in appearance. Then we come upon the men, most of them clad only in gee-strings of colored home-spun materials, for these people are industrious and great weavers. The brighter colored bands, we are told, are worn by bachelors, while those of more sombre hue are the lot of married men. These men are sturdy too, deep-chested, well-built, though their average height is no greater than that of the other islanders. Their legs are muscular from much hill-climbing, and we see many of them carrying huge baskets filled with rocks on their backs, suspended only by a band that passes under the basket and then around the forehead of the carrier.

The mountain people are proud of their abilities and their war-like history. Comparatively a few years ago they were hunting heads in these very forests; in fact the Constabulary occasionally has to chase down some old head-hunter today. But for the most part the mountaineer is now peaceful, and he has accepted the American administration. He does not like his brown brother of the lowlands, nor does he desire to accept his government, his language, or his God. The Christian Filipino is prone to make light of his "pagan" mountain relative, and on every possible occasion exploits him to his own advantage; nevertheless, he fears the mountain dweller, and makes no effort to come in contact with him if it can be avoided.

When we have climbed 3,000 feet above sea level we reach a gate, and learn that for the next six miles the road is one-way. We do not have long to wait, however, before the cars within the stretch come down the moun-

tain and we are allowed to proceed. This part of the road is quite an engineering feat, and it was built and rebuilt many times before slides were conquered and the road bed made safe. It seems to be carved out of the rock itself, and by comparison, the building of Storm King highway along the Hudson, with an abundance of material and modern machinery, must have been a simple matter.

We are through the upper gate now, and still climbing the tiny ribbon of a road weaving its tortuous way along the face of the mountain, crossing and recrossing a tumbling stream on modern suspension bridges that the engineers found necessary to use in order to get the best location. This section recently has been broadened so that two-way traffic is possible. Originally practically all of the road was restricted to one-way traffic, but every year sees more of the trail widened and improved. Now there are only two sections shut off by gates, and soon we are through the last one and climbing the final ascent into Baguio, the "Mountain Capital" of the Philippines.

The location is ideal for summer cottages and rest camps. The Insular government maintains many cottages, the Army has a beautiful site where officers of the services and their families may spend a month each year and recuperate from the heat of the lowlands, and naturally there are many private homes occupied during the hot season. Situated on the very crest of a mountain a mile above sea level, Baguio commands a typical mountain resort view, that seems all the more wonderful because one does not expect to find it in such a tropical country. From the Jesuit Observatory we can see half the Gulf of Lingayen, some 50 miles away, while on the other side of us are mountains, some higher and some lower, many of them with their heads nestling in the clouds. The climate is invigorating, the temperature being low enough at nights for blankets, and in the morning one is glad to hear the boy come in and build a little fire in the fireplace.

The sun shines brightly during the day, but the heat never approaches that of Manila. Golf and tennis are a pleasure, and many people indulge in hiking to the tops of near-by mountains. We are invited to visit one of the gold mines, and we drive down 2,000 feet into a near-by valley to the scene of the mining operations. The ore is being taken out of the hills and comes down to the mill in a bucket suspended from a cable. In the huge rambling buildings it is crushed and washed in great machines, after which the precious metal is precipitated by the cyanide process while the waste products are consigned to the mountain stream and sent flowing down the valley. The machinery, we are told, is among the most modern in the world.

On Saturday afternoon we drive a short distance northward and see the natives coming in to market. The Baguio market is one of the most famous in the Islands, and Sunday morning is its "biggest day." There are scores of men, women, and children walking towards the city in order to be on hand early in the morning, for in addition to being Sunday, tomorrow happens also to be Christmas Day, which means to the natives only that there will be many visitors in town.

These walkers carry their baskets as did the road builders—swung on the back and suspended by a band passing over the forehead. In them we see the products we would expect from the mid-west garden farms in early June—green peas, lettuce, corn, tomatoes, cabbage, turnips, radishes, and string beans. Practically none of these vegetables are obtainable fresh in Manila, so naturally our joy is unbounded at finding them growing here. Of course the prices are ridiculously cheap, as we find next morning in the market, and we buy more than we can possibly use for several days.

One unusual feature is the dog market, and stranger still, the odd but efficient way in which the dogs are carried, or rather lead, to market. Here now is a man with a huge basket on his back, and in each hand the leashes of about ten dogs. But these leashes do not run directly to the dogs. Instead they run to sticks about three feet long, the other ends of which are attached securely to the dogs' collars. This provides a simple yet effective method of keeping the dogs from getting their leashes snarled. Of course eating dog is somewhat repulsive to us, but it does not seem uncommon to these people, although it is true that civilization has attempted to forbid the practice.

Along the road we came upon a small village in which we notice many women weaving, and we stop to watch one of them. She is working on a double piece of material about 20 feet long and two feet wide. One end of the warp is attached to a horizontal rod on the side of the shack about four feet from the ground. The other is fastened to a rod in the weaver's lap, this in turn being held by a rope around her waist. She sits on the ground and holds the cloth at any desired tautness by moving backwards and forwards. The various colored threads which make up the woof are on crude spindles which she shuttles through, across and under with an almost unbelievable dexterity.

In the market Sunday morning we see much of this cloth on sale, some made into gee-strings, dresses, short coats, table runners, bedspreads, pillow tops, or complete native costumes of the various tribes. Each group's work shows little differences; they all have their favorite colors.



An old head-hunter and his trophies.

There are also many things carved out of wood, for the mountain people are expert carvers, and we purchase some book ends to send the "folks back home." They represent men and women going to market, carrying their baskets and leading their dogs. My wife shows a fondness for the wooden salad sets of knife, fork and spoon, while I add a few ash trays to my collection. Finally we decide on a sort of coffee table, about 18 inches in diameter and 20 inches high, for "the house." The table has four legs, each being the figure of a native. It is carved entirely from one piece of red narra, the wood which many call "Philippine mahogany."

On Christmas night the natives gave their tribal dances in honor of the guests at Camp John Hay, the Army post. Selected dances from two tribes—the Ifugaos and the Bontocs—amused a large crowd of Americans with their weird and fantastic ceremonies. They include, among others, the dog feast dance, the rice dance, the war dance, and the head-hunting dance. The women are clothed in many-colored dresses, while the bare skins of the men gleam in the firelight among their few lurid decorations, chief of which is a tall feather stuck in the hair. Music is furnished by bare hands beating and slapping on brass gongs and drums of native manufacture. There is no other sound as the dancers pick up the rhythm, their bare feet gliding noiselessly over the grass. The men carry spears in the war dances and stage a mock battle, while the women dance about encouraging them. It is marvelous how the music from these simple instruments changes for each dance, so that we seem to actually feel the spirit which the dancers wish to convey.

Most of the dancers are soldiers and their families. They have received the white man's education, but they keep alive the traditions of their forefathers. One of them acts as leader, and explains in broken English the significance of each dance before it is given. At the close he responds to an encore by giving a halting little speech which I shall always remember and treasure among my impressions of the Islands:

"My frien', we are ver' please that it is enjoyed what we show for you. We are glad that the Departm't Com-manda, General Booth, and so many officer and lady give us honor by being here. The mountain people, they are ver' happy while the American stay, and we hope it will alway be so. In Manila they talk of Independence, but we no want Independence if our frien' go away, and we hope it will not be so."

In the early history of the Occupation, the Americans were fortunate enough to send men to the hills who endeared themselves to these people. Spain had hardly touched this country, and the lowlanders fear its inhabitants too much to venture far from the hot provinces. A few men of tolerance, possesd of a sense of humor, understanding, and good horse sense, laid a basis for

friendly relationship which has endured with the passing years. These people are happy because they know they will always get a fair deal from their white friends: they doubt if they could hope for as much should their traditional enemies in Manila grasp the reins of government.

Errata

THE January-February issue of the COAST ARTILLERY JOURNAL contained an article "Making Code Practice Successful." We are indebted to Staff Sergeant Clinton A. Anderson, on duty with the Headquarters, Organized Reserves, Atlanta, Georgia, for calling our attention to an inaccuracy in the circuit diagram of the code transmitter. This error, while not serious, would weaken the signal to such an extent as to make it inaudible when transmitted through a loud speaker.

Another minor error occurred in that two tubes indicated in the diagram have no grid bias. This would operate to distort the signals. It is not believed necessary to reproduce a corrected wiring diagram but the author of the article, 1st Lieutenant G. W. Fried, whose address is The Armory, 205th Inf., Luverne, Minn., states that he will gladly furnish a corrected wiring diagram upon request. Merely drop him a post card.

Service to the Corps

We are indebted to *The Track-Tor* for the following:

"It would be desirable for each officer to have a personal library for reference and study, and a good foundation for this would be: Tactics and Technique of Coast Artillery, Basic; Officers' Guide; American Campaigns, Steele; and History of the United States Army, Ganoe. All of the above can be procured from the COAST ARTILLERY JOURNAL.

"Are you aware of the fact that the COAST ARTILLERY JOURNAL can quote you money-saving prices on magazine subscriptions? Use the card that was enclosed with last month's copy of *The Track-Tor* and find out just what the COAST ARTILLERY JOURNAL and the UNITED STATES COAST ARTILLERY ASSOCIATION is doing for you and your brother officers. If you have lost or misplaced the card, a letter to the Secretary, U. S. Coast Artillery Association, 1115 17th Street, N.W., Washington, D. C., will answer the purpose equally as well. Join the UNITED STATES COAST ARTILLERY ASSOCIATION now!"

NOTE: *The Track-Tor* is a mimeographed news sheet published by the officers of the 608th C.A. (TD), Colonel Forest E. Baker, Commanding.

Can We Broaden Our Basic Education?

BY LIEUTENANT BURGO D. GILL, C.A.C.

A CAPTAIN stated jokingly, "I joined the Army sixteen years ago to get out of school, and I'm still going." This statement made in a spirit of levity makes one wonder, especially a junior officer. Education is necessary, but in order to have a broad education and a more or less complete one within our own profession, the wider our basic education, the better we will be able to build in future years.

Before continuing, let us list the present ways, means, or methods in which junior officers are taught, or given the opportunity to self-educate themselves.

1. The cooks' and bakers' schools.
2. The regimental schools. (Usually on any topic at one o'clock when one's tummy is filled with food.)
3. The haphazard and seldom available opportunity of a four-year detail with another branch to see what the other "guy" does.
4. The suggested War Department reading list.
5. The Reserve officers' correspondence courses that a regular may take, but that are very little advertised or recommended to junior officers.
6. An occasional lecture on one's own regimental war plans.
7. The branch magazine to keep up with day by day developments.
8. The excellent Battery Commanders' course at the service schools.

All of the above methods are excellent, but they are terribly disjointed. They possess very little coordination between themselves, and at the same time produce an officer more or less an expert in his own branch, but woefully lacking in a broad education, and a corresponding wide outlook.

The writer may be wrong, but under the National Defense Act, are not we regulars supposed to be educated in a military sense upon as broad a line as possible. Why are we "Branch" officers? Why not "Army" officers?

The provisions of the National Defense Act permit details for four years in other arms. Even if this is so, try and get a detail if one is in an under-officered branch and wishes to have duty in a crowded branch.

To broaden the outlook of all newly commissioned officers, why commission them in any particular branch? Why not have them second lieutenants unassigned? During this period, each lieutenant would serve three to six years on a practical postgraduate course. The latter period sounds awfully long, but with forty years of service ahead, and about six years to a first lieutenant's commission, it is not so long. During this period, each officer would spend one or two years in one of the following categories before rotating to the next:

1. The Infantry or Cavalry arm.
2. In either of the Artillery arms.

3. In a supply, or staff branch.

Also, while rotating, he should spend some of his time with both a horsed and a motorized organization. Then, at the end of this three to six year period, each officer would be given an opportunity to pick his own branch as far as possible. About this time, he should be sent to his branch service school as well as be promoted to the grade of first lieutenant.

The writer believes that the average officer would have a broader basic education and a wider outlook upon which to build his career. Undoubtedly the War Department would possess a more experienced group of junior officers in case of a national emergency. This system sounds revolutionary, but our own Navy has a similar system whereby it changes its ensigns from bridge to engine room, to turret, and to plotting room about every six months. During this formulative period new officers should be given the absolute minimum amount of work in running Post Exchanges, movies, athletics, and personnel adjutanting.

Of course, someone will rise up and state that this system would be too expensive on account of the yearly changes of station involved, or that our Army has not enough officers to permit so much changing.

Now, to return to our criticism of what is wrong with our basic education upon being commissioned. For example, take the writer's own experience when he arrived in Panama and reported to a Coast Artillery regiment. The regimental course in local geography consisted of a tactical walk to the top of Taboga Island (which was given in more or less of a hazing spirit). Then we suffered a sudden spasm of Spanish which lasted about two months—at our own expense! Why should not we have been ordered to take Spanish for two years at government expense? Next followed a brief period of enforced War Department readings from their popular and well-advertised list. This also "poohed out" like the Spanish classes. We also received two one-hour lectures on war plans which were enjoyed by all, as the Colonel was a master of critical and humorous sarcasm. Then we became vitamin conscious and all became expert cooks and bakers both on the post in local schools and in Department schools. Last, but not least, and this was the only course that seemed to be started and carried out to a logical conclusion, was our regimental gunnery class.

The above listing taken as a whole seems to give an impression that the system of education—and Panama is no exception but seems to be the rule all over the army—lacks a lot. Therefore, to correct this faulty catch-as-catch-can method, every officer, particularly a junior in an overseas possession, should immediately be trained in local war plans, topography, customs, policies, and (possibly) the native language.

How the Trophy Was Won

The 249th C. A. (HD) Sets New Record for General Excellence

BY CAPTAIN L. D. FARNSWORTH, C.A.C.

NEAR the mouth of the Columbia River are several harbor defense installations covering the seaward approaches. At widely separated places in the State of Oregon, are stationed the batteries of the 249th Coast Artillery (Harbor Defense). For many years this regiment has been assembling at Fort Stevens for field training and service practice; there they have seen no other troops except a few caretakers. The personnel have come to the conclusion that they are the sole defenders of this section of the coast line. As a result they take their jobs seriously; they know they have a mission and are constantly striving to fit themselves to carry out that mission effectively. That they should receive a reward for excellence comes as a surprise to them, for a prize has not been their objective. Their objective has been to prepare themselves to efficiently perform a difficult task. They have made steady progress without their knowing it and it is natural that their conscientious effort should place them in a premier position.

Like their pioneer forefathers these sons of Oregon have had to stand on their own feet and to do things for themselves. Sixty to three hundred miles separate the several batteries. The Instructor sees them once in three months. The armories are bare of artillery equipment, except position finding and the gadgets they have built themselves.

The natural question is: how have they been able to progress in their technical knowledge? Answer—by digging it out of texts for themselves, diligence in pursuing extension school courses, and asking innumerable questions when they get hold of some one they think knows the answers. How have they been able to put over this technical knowledge to the men and train their teams? By improvising gadgets and equipment which make the principles involved self-evident. What keeps them interested and enthusiastic? Inspiration and leadership from an enthusiastic regimental commander who plans well ahead. Lieutenant Colonel Irwin insists on a high standard of performance for his regiment and all batteries are striving to set the pace. He annually rates his units in all their endeavors and awards a regimental efficiency trophy. What has been the Instructor's policies? Work on the officers so that they can in turn know how to work on their men, gain their confidence and break down a tendency to cover up deficiencies and simplify the Coast Artillery technique as much as possible.

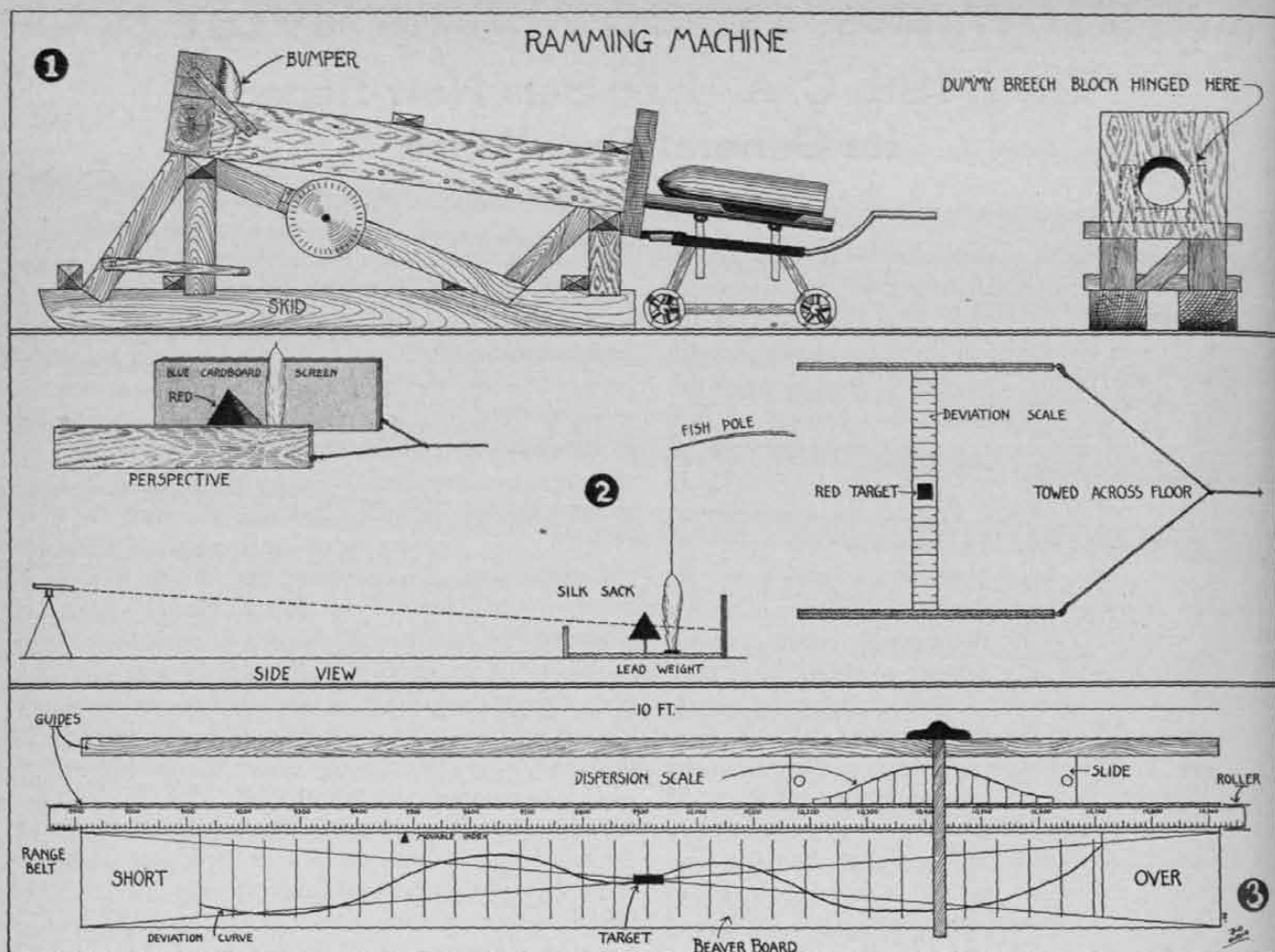
The ingenuity of battery commanders in improvising equipment is most interesting. Space and time will not permit of mentioning all devices. Mention of a few will

suffice to show resourcefulness of battery officers. For example: Battery "D" could not focus azimuth instruments in its armory because of insufficient space, so they mounted mailing tubes equipped with cross hairs and peep holes above the telescopes. This same battery trains its spotters on a near-by lake by towing a target attached to a rowboat. Splashes are obtained by tossing rocks near the target from the boat. The spotting board is adjusted to the lake shore baseline. Batteries "A" and "C" have projectors and projector rooms so that photos, drawings and prints of guns, mechanisms, etc., can be thrown on a screen during lectures and classes. Battery "C" has a whole fleet of miniature war vessels of all types moving at the same time across its drill hall field of fire for purpose of target designation and identification. Battery "A" recently had its armory rehabilitated and a stage built in it as a community project under the C.W.A. The battery commander saw to it that the wings of the stage were constructed so as to give him a complete replica of the mortar fire control setup of Fort Stevens, with sound-proof data booths, speaking tubes, etc.

All batteries have constructed some adaptation of motor-operated targets, ramming machine, miniature range and spotting trainer. The following are typical:

Figure I illustrates a home-made ramming device, this has been found to be of great help in coordinating the footwork of the shot truck and ramming details. Each battery took home from Fort Stevens in the summer of 1932 a 500-pound projectile and a shot truck. (They would have taken a 10-inch gun if they could have obtained the authority). The ramming machine has various attachments as range drums, tripping levers, primer holder, etc. Its one big deficiency is the lack of a real breech block. The mortar battery has a ramming machine slightly different from above and an additional piece of matériel on a base-ring that can be traversed for azimuth settings and elevated for quadrant settings.

For training in position finding batteries have well-equipped plotting rooms. Drill floors are laid out as miniature fields of fire to a scale of one foot equals 100 yards. Base lines, directing points, and datum points are accurately located, and plotting board oriented therewith. Miniature targets are towed in sinuous courses across the field of fire. For test purposes the position of the target at each time interval is marked on the floor and with an oriented azimuth instrument over the directing point and a steel tape the track of the target is checked against the plotting board track.



For training in spotting, each battery has a well constructed Gray Spotting Board (old model) built to a scale of 150 yards equal one inch. Two M2 spotting boards were built of three-ply wood veneer to a design obtained from the Coast Artillery School. These boards proved inaccurate due to material and construction, and were difficult to operate. The principles involved were hard to make clear to the operating personnel, so the simpler Gray board was adopted by the regiment. The battery commanders all realize the necessity of accurate spotting data and the necessity of well-trained spotting details.

They have exhibited considerable ingenuity in devising training gadgets. The rowboat and stone-heaving plan of one battery has been mentioned. The device of another battery was described in January-February, 1934 issue of the COAST ARTILLERY JOURNAL. This device has one defect in that the splashes move with the target. A spotting trainer has been built and successfully used for testing the sufficiency of training of all spotting details. The operation of this device is evident from Figure II.

To facilitate training in adjustment of fire, spotting board operation, range percentage corrector, and communications, Lt. Col. Irwin directed that a fire adjustment problem slide rule be constructed for each battery. A design was finally developed which included a chang-

ing range so as to make necessary the use of the range percentage corrector, and other features which requires that the spotting board operation be included in the problem. With this problem board the battery commander, his range percentage corrector operator and spotting board detail all enter into the problem. Five of these boards have been constructed, one for each firing battery.

The range belt is moved to give changing plotting board range. An assumed ballistic range correction is given so as to throw the center of impact off of the target. The C-I of Dispersion Ladder is set at the range taken from the range percentage corrector. When a shot is fired a splash is indicated by placing a red-headed pin on the beaver-board field under the dispersion ladder as directed by three rolled dice. Assumed deflection observations (as would be seen by spotters) are sent to spotting board. The Battery Commander makes an adjustment through his range percentage corrector as a result of deviations sent to him from the spotting board. He does not see the operation of the slide rule. Spotting data is secured from the deviation curve drawn on the beaver board. A description of this curve would be much involved and not pertinent to this article. The construction of this board is one of this year's activities, and is mentioned to indicate the trend of training outlined by the regimental commander.

Rigid Towing Device for Motor Trucks

BY CAPTAIN L. A. WHITTAKER, 62ND C.A. (AA)



The Assembled Drawbar

THE participation of the 62nd Coast Artillery in the recent joint Air Corps-Antiaircraft exercises required that regiment to march nearly 1,800 miles. The most difficult problem that the movement produced, in the opinion of the motor transport officer, was the towing of very heavy disabled motor trucks. This problem was rendered more difficult by the nature of the terrain encountered and the speed at which the main columns moved while on the road. Most of the eastern part of the route selected was extremely hilly, and in some cases even mountainous, while the speed of the column reached as high as 45 miles an hour at times.

The motor equipment for this march consisted of 18 modern prime movers for the three-inch antiaircraft guns, about nine Duplex searchlight trucks, and various types of experimental trucks of different capacities furnished by the Quartermaster Corps from the experimental fleet at Holabird Quartermaster Depot. These last named vehicles and the prime movers are equipped with air-brakes and are extremely heavy when loaded, some units weighing as much as seventeen tons.

Because of several breakdowns of heavy trucks on the outward march from Fort Totten to Fort Knox and the failure of the drawbars on hand, it was found necessary to devise a more rugged drawbar that could be used on more than one type of truck.

The drawbar illustrated here was designed through the joint efforts of the author and Mr. S. T. Howard, foreman of the machine shop of the Jeffersonville, Indiana, Quartermaster Depot.

These bars, made at the depot under the direction of Mr. Howard, were called into service several times during the return trip. It was found that the bar would tow vehicles weighing as much as seventeen tons without the slightest difficulty. However, with the heavily loaded vehicles, it was found that the bar alone could not be depended upon to perform the braking action. This was particularly true when the compressive force was trans-

mitted at an angle such as occurred when the towing truck changed direction too quickly.

This difficulty was solved by connecting the air-brakes of the disabled vehicle to the air-brake system of the towing truck by means of flexible cables and a supply of the proper style fittings. In this way the disabled vehicle was braked as a trailer and the driver of the towing vehicle had perfect control over both vehicles. For lighter vehicles such as class "B" trucks, no brake action is required.

Using the air-brake connection as described, the bar was used to tow a six-wheel drive truck, which with its load weighed about seventeen tons, at speeds up to 35 miles an hour.

The method of application of the drawbar to the trucks varies somewhat with the type of front bumper design. For trucks with a bar and spring assembly such as is found on the old class "B" and new Quartermaster four-wheel and six-wheel drive vehicles, the bumper assembly is removed and the two oak timbers are bolted to the front cross member of the frame, using two filler blocks of the 4" x 5" timber in rear of the frame cross member. The clamps and bolts holding the oak timbers to the front member are placed as close to the side frame as possible, in order to prevent shearing the rivets which hold the cross member to the sides of the frame.

If it is desired to tow a vehicle with a rigid front bumper assembly such as is found in the General Motors prime mover, a set of longer bolts for the steel clamps, made necessary by the deeper cross member, is all that is needed to make the drawbar fit properly.

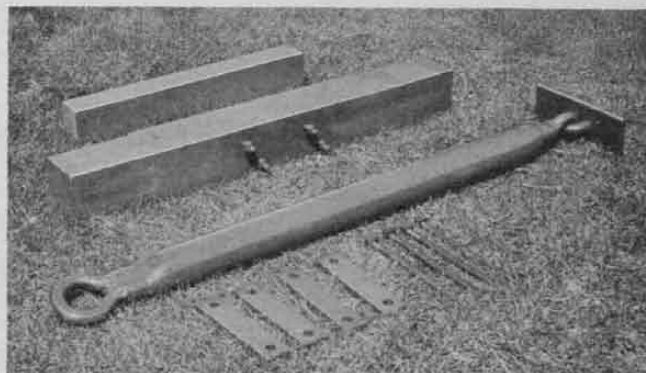
There follows a bill of materials required to make one drawbar of the type illustrated:

Bar body.—One piece of extra strong $3\frac{1}{2}$ " steel pipe (4" outside diameter), 53" long.

Bar eyes.—1 $\frac{1}{4}$ " round steel bar, ends entering swaged part of bar body about 3". Eyes torch-welded to body.

Staple Plate.—One steel bar, $\frac{5}{8}$ " x 5" x 12".

Staple.—One steel bar, 1 $\frac{1}{4}$ " diameter, 2" width of in-



The Component Parts of the Towing Device

side opening, welded to staple plate on back side.

Staple Plate bolts.—Four, $\frac{5}{8}$ " x 7" with square heads.

Clamps.—Four steel bars, $\frac{3}{4}$ " x $2\frac{1}{2}$ " x 10". (Note —Slightly longer clamps are needed for the prime mover front cross member).

Clamp Bolts.—Four bolts $\frac{3}{4}$ " x 14" (See note on clamps).

Front timber.—Oak dressed 6" x 6" x 48"

Rear timber.—Oak, dressed, 4" x 5" x 30"

It is estimated that the above material and labor to make one bar would cost \$20.00.

1 1 1

Use of 1918 Azimuth Instrument as a D.P.F.

By Lieutenant Frank P. Corbin, C.A.C.

THE use of the 1918 azimuth instrument as a D. P. F. was demonstrated recently in the joint Army-Navy maneuvers held off Fort Mills. As is well known, the 1918 azimuth instrument differs from the 1910 instrument in that the former has a small vernier scale to read the angles of depression in mils.

During the maneuvers a small detail was sent to a point on the mainland where rather high elevations are to be found, for the purpose of observation. The only observing instrument carried was the 1918 instrument. Communication between this detail and Fort Mills was by means of the new portable Signal Corps hand-operated radio set.

The point of altitude gave the detail an horizon of about 100,000 yards on slightly misty days. This visible horizon was clearly defined in the eyepiece of the instrument. In setting up the instrument it was approximately leveled by means of the bubbles, and a reading of zero was set on the depression scale. By using various points of the horizon as check points, the telescope was further leveled.

After leveling it was a simple task to sight points on Fort Mills and set the azimuth scale. The problem of finding the altitude of the instrument was overcome by having Fort Mills take readings on our position at night. Using a five-cell flashlight as a marking point at the 1918 instrument, Fort Mills gave us our angle of elevation from their instruments and we were able to compute our altitude, knowing the map distance from the station on Corregidor.

The system of making readings and transmitting the data was simple. Considering the angles of depression at the instrument as the angle of elevation at the target, all calculations were based on the rule that one yard at 1000 yards equals one mil. Therefore, dividing our known altitude in yards by the scale reading in mils, and multiplying the result by 1000, gave the range to the target.

(This method was later improved by having a chart constructed at the data receiving end and we sent depression angles direct.) The above data plus the azimuth of the target was sent over a field telephone to the radio transmitting set and thence to Fort Mills. Readings were made at one-minute intervals and, despite all the difficulties of transmission, were received in approximately thirty seconds.

Later checks made of the efficacy of this system showed that at a range of 50,000 to 75,000 yards the errors were less than 100 yards. For its own amusement, the detail tracked a ship on a very clear day at a range of 120,000 yards, and although there were no means of verifying the results it was estimated that the data was accurate to within 150 yards.

1 1 1

Another Gadget

There seems to be a general tendency to cut out, as much as possible, the transmittal of data by voice. One of the places where there is a great deal of confusion and excess noise is in the plotting room. The following gadget is merely for the purpose of eliminating errors in the transmission of data from the Pratt range board to the percentage correction board.

The first step in this great improvement is to add another scale to the curves on the Pratt range board chart. This new scale is merely the battery commander's correction. The scale consists of vertical lines in some unused portion of the chart. Scale—usually $\frac{1}{4}$ inch equals one per cent. (It may be different for some boards.)

The next step is to set the percentage correction board up vertically and alongside the Pratt range board. Now the work commences. A mechanical gadget can be constructed to convert linear readings to logarithmic readings. However, this is too much work to justify the end so the next step is redrawing the chart of the percentage correction board to a linear scale. The idea was mentioned to the Coast Artillery Board but I do not know how far the work progressed. However, in the drawing of this new chart, the scale is determined from the type of Pratt range board ruler that you have on your instrument. The index pointer for the percentage corrector is attached to one of the moving slides on the Pratt ruler. It is merely a small problem in percentage to determine how many inches equals one per cent on the redrawn scale.

To set the instrument as assembled you merely put the Pratt range board at a reading of zero and set the pointer of the percentage correction at zero. Then in operation of the system the Pratt range operator proceeds as usual. The percentage corrector operator sets the uncorrected ranges opposite zero and reads the corrected ranges under the index direct to the guns.



Excaliber Long Range Practice and Ex-Ex-Caliber Practices

BY MAJOR LE R. LUTES, 15TH C.A.

FOREWORD: There are no new thoughts expressed in this article. The methods outlined have been used previously by other organizations. I fired Battery Montgomery, Fort Monroe, in a similar manner in 1925, in order to train five "incubate" lieutenants in major caliber methods of firing. However the article may be of interest to junior officers or officers who have had very little service with firing batteries.

BATTERY Williston (16" B. C. guns) to which Battery A, 15th C. A., is assigned, fired two experimental long range practices in May, 1932. In the fiscal year 1933 no sixteen-inch ammunition was made available for firing, due to the necessity for economy. To maintain the state of efficiency attained by the personnel assigned to the battery, the Harbor Defense Commander (Col. H. B. Grant) recommended that a *service* target practice be fired using the entire fire control equipment of Battery Williston but substituting some other armament for the actual firing. In other words, to displace the directing point to an auxiliary weapon for which ammunition could be authorized in view of lower cost and less wear on the armament.

The nearest fixed guns that could be fired with the plan outlined are located 2500 yards from Battery Williston. The use of a battery at this distance would displace the directing point too far and disperse the personnel beyond the direct control of the battery commander. Such a plan could be considered feasible as an emergency war measure, but undesirable for competitive target practice.

On recommendation of the battery commander, authority was obtained to fire the practice with two 155 mm guns emplaced on the beach directly in front of the battery. In addition a series of 75 mm ex-caliber practices were authorized. The 75 mm ex-caliber guns are on fixed mounts attached to the 16-inch guns of Battery Williston.

This scheme had the following advantages:

(1) The personnel were under unified control in the same general locality.

(2) Two 155 mm guns were displaced 105 yards apart, thus bringing into use the M-1 Deflection Board normally used at Battery Williston (including its displacement corrector).

(3) The accuracy of fire at or near maximum range compared favorably with that of the 16-inch, 2,100 pound target-practice projectile.

(4) The ex-caliber practices with the 75 mm guns of Battery Williston gave the gun sections considerable training in elevating and traversing the 16-inch guns. These exercises also kept the motors, speed

gears and other mechanical features of the installations in excellent condition.

(5) Ammunition costs allowed a sufficient number of rounds for two adjustment problems (17 rounds each) with the 155 mm guns.

The plan had the following disadvantages:

(1) The scales on the sights on the 155 mm guns were graduated in mils, whereas the data computed in the plotting room was in degrees.

(2) The service at the guns was entirely different from that at the 16-inch guns.

(3) A fair comparison of the results of practice with those of other batteries would be most difficult. The practice could not be fired with the advantages and disadvantages of a normal 155 mm gun practice. It could not be fired with all the advantages and disadvantages of a normal major caliber, fixed gun practice.

The first disadvantage could not be surmounted. It was necessary to convert data going to the guns into mils. The second disadvantage was largely obviated by firing 75 mm ex-caliber practices with the guns mounted on the sixteen-inch guns and at the same time training gun sections to serve the 16-inch guns with dummy ammunition. In order to alleviate the third disadvantage and make the scores of the 155 mm gun practices somewhat comparable with other seacoast battery scores, the Chief of Coast Artillery directed that the scoring methods be modified as follows:

(1) Normal range to be 14,000 yards. (The normal range prescribed for regular 155 mm practices is 12,000 yards).

(2) K factor to be 90 seconds with the restriction that "t" should not be taken as less than 75/90 times KS/g (this gave the battery approximately the same length of time between the splash and the next firing bell as all other major caliber armament, with a "stop" on gt/S, so that if the time per shot per gun averaged less than 75 seconds, the "C" component would not increase beyond a value of about 23 but would be reduced therefrom in accordance with the increase in the time used.

(3) Hypothetical target—a transport.

Thus it may be noted that the bonus score available for firing at long range was considerably reduced, being limited to that resulting from firing beyond 14,000 yards. Inasmuch as the fire was to be deliberate, simulating that of a sixteen-inch battery, the score for time was practically fixed, in order that it would be compara-

ble with that of other 155 mm batteries. These two restrictions on computing the score, more than made up for any advantage gained from deliberate fire.

Two 155 mm guns were taken from the War Reserve at Fort Kamehameha, moved across the bay by tractor and barge and emplaced on sandy beach about three hundred yards in front of Battery Williston. The records pertaining to the 155 mm guns indicated the number of rounds previously fired from them but did not show any calibration data.

Field wires were extended from the regular plotting room of Battery Williston to the 155 mm gun positions and time interval bells and field telephones installed near the guns. The plotting room was in a bombproof building, 800 yards from the gun emplacements.

About the time that the installations were completed, a change in the foreign service regulations permitted men due to return to the mainland in July, 1933 by reason of expiration of enlistment, to return in March, 1933. This took heavy toll among the key men of the highly trained range section, which had so successfully fired a series of long range practices and a regular target practice in the previous year. Twelve key men including the plotter departed. Thirty-two enlisted men were required for the complete range and spotting sections (to include recorders and spotting observers). Of this number twenty-five were required for the plotting room. The fire control sections started training with only two observers and two members of the Spotting Board detail, who had previously functioned in a target practice. The plotter had never before filled this position.

Before training with the 155 mm gun battery, several practices were fired with the 75 mm guns (ex-caliber on the sixteen-inch guns). These firings gave the range section excellent training (with the exception that conversion of degrees into mils was not necessary for data going to the 75 mm guns). In addition, these firings were utilized to train the Spotting Section. After the 75 mm gun practices a few practices were conducted with the 37 mm ex-caliber guns mounted on the 155 mm guns. These practices were dubbed "ex-caliber" firings. They were invaluable in training the range section to turn out data in mils and to train the new gun pointers to sight on aiming points, set data in mils and apply corrections. Prediction tests were conducted during these "ex-caliber" firings, using an azimuth instrument at each gun. All practices were conducted as Case III firings.

The service practices with 155 mm guns followed. They were fired under Case III, using all fire control apparatus in the Battery Williston (16" BC-guns) plotting room. The plotting board (Mark I) is equipped to produce ranges in yards and azimuth in degrees. These data were converted into mils-elevation and mils-deflection, before they were sent to the guns. The range percentage corrector was used with a double tape that enabled the operator to instantly read mils of elevation opposite the range in yards. The Mark I deflection board was used

with mil scales. An extra member of the range section was introduced to convert azimuth into mils. For this purpose he used a double tape on boxed rollers in a manner similar to that used by the operator of the range percentage corrector. Ranges were sent to the guns in parallel, but separate azimuths were sent to each gun due to the displacement.

The normal firing interval of the 16-inch gun battery is listed at 1½ minutes (for target practice purposes). In order to insure that the practice could be completed during the time that the target was in the limited field of fire of the 155 mm guns, one shot per minute was fired from each gun or one shot from the battery each thirty seconds. (This firing interval would be entirely practicable with the 16-inch guns.) As previously explained the battery gained nothing in score by firing on the shorter time interval. It was used merely for convenience.

From experience in firing the 16-inch battery and in three joint Army-Navy maneuvers with that battery, it was the belief of the Battery Commander that very deliberate fire would be used by these guns in most tactical situations. For this reason it was directed that two adjustments be made during record fire (in addition to the one based on ranging shots), if necessary, regardless of any small loss of time incurred.

The problem in deflection was most difficult. There was one mil of "play" in the deflection board which could not be entirely eliminated. It is obvious that it is most difficult to estimate travel of a target to the mil in accuracy, and thus a one mil error in "raw" azimuth could be made on the plotting board. In addition there was always the possibility of a one mil personnel error being made during the conversion of data from degrees into mils. A one mil error at 14,000 yards could result in a 14-yard deviation in deflection, thus missing a bow-on hit (½ width of bow-on transport target is 10 yards).

Spotting observers were placed in base line OPs. In addition a unilateral spotting observer was placed at Diamond Head and an aerial observer was available. A blackboard was placed near the M2 spotting board and telephone operators placed there to record the "spots" reported by the Diamond Head and aerial observers. The "spots" from the M2 spotting board were also recorded on the blackboard. The three spotting results were visible to the Battery Commander and Adjustment Officer. When the three spots were approximately similar in magnitude the mean of the three was used. When a "spot" was over one half of a probable error different from the other two, the mean of the two or more similar magnitude was used.

These practices may appear to the casual observer as very simple affairs and such would be the case were they merely experimental practices. However, they were conducted as service practices, to be rated in comparison with major caliber armament fired at similar ranges, using normal installations. Considered in this light they gave the battery commander considerable worry.

New Type Testing for Gunners' Examinations As Used in the 243rd Coast Artillery (HD)

BY CAPTAIN WALTER F. PARKER AND LIEUTENANT PETER E. DUNNELLY,
243RD C.A. (HD).

THE greatest advance in education in recent years has undoubtedly been made in the field of objective testing. This progress has come about as the result of a conscious effort to systematize teaching and to put education on a scientific basis. At present one may purchase tests which will tell, with a surprisingly high degree of accuracy, such things as:

The ability of a child to do school work of the academic type.

The chances of a pupil for success in college work.

Ability to read and comprehend English.

Speed of reading.

Knowledge of music.

Teaching aptitude.

Ability in salesmanship.

The adjustment of a pupil to his school and his life.

Degree of knowledge of the so-called "cultural" subjects.

Mastery of the subject matter of any field of learning.

A child's major field of interest.

These and many other types of tests come in compact, printed form, easy to handle, self-explanatory, requiring very little writing on the part of the examinee, and with keys for absolutely objective scoring and grading.

Of all these types of tests, the most satisfactory are those which test information rather than skills, attitudes, adjustments or aptitudes. We have, in our requirements for gunners' ratings, a perfect set-up for a new-type examination. There is a specified, definite amount of material to be learned, laid down in our gunners' manuals in catechism form, and representing about ninety-nine per cent specific information. Yet we are satisfied to conduct our examinations on the old, hit-or-miss oral plan.

In order to discover just how far we have been missing the mark of accurate, fair, objective and businesslike examination of our candidate gunners, let us contrast the two following pictures of gunners' examination night. All are familiar with the first type, and we of the 243d Coast Artillery, where the pioneer work on this type of examination has been done, know of the second.

The usual organization of an oral examination assigns each officer a subject which is one part of the whole examination. Given one man at a time and about twenty minutes in which to question him, an officer could obtain a fairly accurate idea as to the candidate's knowledge of the subject, but his mark would still be only a guess, because his standards, being mental, would not remain constant throughout the evening. However, he is not allowed that much time, but is forced to examine about

five men in ten minutes or less in order to finish his work the same evening. Each man is asked questions in turn and, when either the questions or the time runs out, he is marked 27 or 36 or 11 out of 40 possible points. Unless the officer is very unusual and does a bit of accurate bookkeeping, he often forgets who answered which questions, his marks are extremely subjective. Furthermore, since the candidate is asked only a few questions, they may be just the few he knows or just the few he does not know. The same question could not very well be asked of two men in the same group; hence all do not receive the same examination.

Very often, without his being aware of it, there creep into the examiner's calculations such items as the candidate's personal appearance, the fit of his uniform, the battery from which he came, his personal friendship with the officer or the fact that he needs the gunner's rating to make him eligible for a promotion to corporal or sergeant. These items make the result not a great deal more fair or accurate than that which could be obtained by the use of an ouija board or a pair of dice. As the candidate passes from one officer to another he collects a series of guesses which are added together and if they total the correct amount, he is a gunner, if not, he is rejected. Do all who passed know more about gunnery than those who failed? We have no way of knowing—they did not all take the same examination nor were all marked on the same basis.

As the hour grows late the president of the examining board, with an eye to the long day at the office on the morrow, attempts to speed up the wheels of justice with the result that the remaining candidates are slid through with scant consideration. Quick judgments are made, passing or rejecting, which are grossly unfair to the men. However, in spite of this demonstration of executive skill and management, we have all been on boards which adjourned somewhere in the neighborhood of one or two o'clock in the morning.

Very often officers are assigned subjects with which they are not familiar. This would not normally be true in the Regular Army, but it often happens in the National Guard, especially in those regiments which employ a large variety of types of seacoast and antiaircraft armament. Officers are not usually asked to examine men of their own batteries, to whom they have taught the subjects; hence the assignment of a gunners' board is no mean task in itself.

Then, too, this method is very expensive. One day's pay for all the majors, captains, and lieutenants on a board of about thirty officers would add up to a considerable

sum, especially when we add in all the traveling allowances.

The other picture is based on the experiences of the 243d Coast Artillery in the two examinations thus far conducted on the new plan, namely in May and November, 1933. Tests of the new type were prepared for six, ten and twelve-inch guns, the twelve-inch mortar, the antiaircraft machine gun, the three-inch antiaircraft gun and the searchlight battery.

In the main armory at Providence, at the November examination, three officers were more than enough to take care of the written examinations for first and second-class gunner of 156 men. The candidates were assembled in a large hall, given copies of the examination and directed to sit at tables and go to work. The officers answered a few questions, but, for the most part, engaged themselves in a discussion of current football games.

Each man had an opportunity to work at his own speed and to see the question and think about it before underlining the correct answer or numbering the correct part. No quick answer was required as in the oral examination. He had many more questions to answer, but he knew that everybody else had to answer the same questions. The test was more thorough but also much more fair and accurate.

Some men finished in half an hour, after taking time to check their answers carefully, and they were allowed to report back to their batteries. These men invariably passed with high scores. At the end of an hour and a quarter all had finished and a few had taken both first and second-class examinations. There had been no hurry or confusion, and the evening, instead of being one of hectic strain, was a model of peaceful efficiency.

The papers were collected and distributed to the officers of the board together with keys containing the correct answers. No subjective judgments could possibly enter into the final grades since the answers were either right or wrong according to the key. The work of correcting was done at home during leisure moments and the papers were turned in to the president of the board at the end of the week.

In this way an objective rating was secured for each man and his test paper, marked "accepted" or "rejected", and signed by the member of the board who corrected it, is kept at headquarters as a permanent record in the event of any dispute. Another advantage is that, with a comparatively small expenditure of time and effort, a study can be made of the test papers which will bring out the subject or subjects in which most men of a certain battery failed. This will indicate to the instructing officers a weakness in their teaching which could be eliminated next time.

From a comparison of these two methods the defects of the prevailing system become very evident. The new type test claims the following advantages:

1. It examines more thoroughly.
2. It gives more time for careful thinking on the part of the examinee.
3. It allows a candidate to work at his own speed whether it be slow or fast.
4. All candidates take the same examination for each rating.
5. The final rating is objective, thus eliminating all guesswork and unfairness.
6. It allows for analytical studies which should improve the training of gunners by actually placing the responsibility for poor work.
7. It provides an objective record for headquarters.
8. It is more economical of time and money.

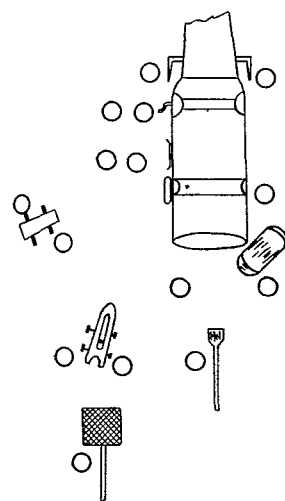
The organization of most of the National Guard Coast Artillery regiments is comparable with that of the 243d, namely, the regimental headquarters and five batteries in the main armory and the others scattered about at various distances in the other cities and towns of the state. In some states the distances are so great that it is almost impossible to send officers on gunners' boards to all the units, especially in winter. If the idea of new-type testing is followed to its logical conclusion, all units of every state will be well provided for. Three or four comparable tests will be prepared and printed for each type of armament and for each gunner rating. The group will, together, test all of the information that a candidate is required to know, and each will contain questions on all the important items and a different sampling of the remainder of the material. Examinations could then be held as often as desired, but, if a certain date is set every year, the battery commander would send in to headquarters the number of men to take each type of examination; the colonel would decide which form of test is to be used that time, and the correct number ordered from the publishers at a cost of from five to ten cents each. The tests could be sent by mail to the battery commander, who would open the package on the night of the examination and distribute the papers. When the tests were finished he would collect them and remail them to headquarters where they could be corrected by the use of keys. The corrected papers would then be filed at headquarters and studied at leisure. To insure that the examinations are given under the proper auspices, the battery commander would be required to sign an affidavit to the effect that the men received no unauthorized aid in doing the work of the examination.

This plan would eliminate the hustle, confusion and expense of the present method as well as its abject inefficiency and unfairness.

When the idea of new type of testing was first presented to the officers of the 243d, many of the more practical-minded agreed with it as a theory but wanted to know how we could test on a printed page such a subject, for instance, as the service of the piece. Undoubtedly many who read this article will be curious as to the actual methods used and, since the examinations obviously can-

not be reproduced in toto in this publication, we have selected a few types of questions and diagrams designed to satisfy this natural curiosity.

Experience has taught us that the best method of teaching a soldier the service of the piece is first to have him memorize the names of the various details or jobs and the numbers of the men in each detail. With this information available he can much more readily answer questions regarding the positions of the cannoneers or their duties. Let us suppose, for example, that he is asked a question concerning the duties of No. 3 on the 12-inch rifle, disappearing carriage, at the command "Load". He knows that No. 3 is on the breech detail and that he is the "primer man", which information narrows down his range of thought considerably and aids tremendously in making the correct answer.



On the following lines write the names of specialists or key men on the gun section. A sample is done for you.

1. Gun Commander.
2. _____
3. _____
4. _____
5. _____

(25 points)

Beside each number write the name of the detail. No. 1 is done for you.

- No. 1. Breech Detail
- No. 2. _____
- No. 3. _____
- No. 12. _____
- No. 13. _____
- No. 9. _____
- No. 17. _____

SERVICE OF THE PIECE (10-INCH)

DIRECTIONS: In the small circles place the numbers of the members of the gun's crew in their position after the command, "Details, Posts."

Another important element concerns the positions of the men after the command "Details, Posts"—the positions from which they work. If the candidate knows the detail and the position of every cannoneer and specialist on the gun crew, he is well on his way to success. These two very important elements may be tested on one sheet, (Figure 1), which is, in itself, a tremendous improvement over any method yet devised for testing the service of the piece in armories not equipped with model guns. It is not, however, sufficient to complete the task of examination of this subject, and, to complete the job, we have formulated a number of true-false statements such as those shown below.

For material of a purely informational nature we have found that the multiple choice type of question is the most advantageous and most easily understood by the men. A few samples of this type are also shown below:

MULTIPLE CHOICE QUESTIONS

DIRECTIONS. Draw a line under the word or group of words which correctly answer the question. Only one answer is correct for each question.

1. What kind of powder is used in the igniting charge of guns?
 1. Yellow powder.
 2. Trinitrotoluol.
 3. Smokeless nitrocellulose.
 4. Black powder.
2. Why are powder bags made of special raw silk?
 1. Because it is cheap.
 2. Because it is lighter than other fabrics.
 3. Because it burns with no residue.
 4. Because it is stronger than other fabrics.
3. When a primer fails and is rejected what is done with it?
 1. Scrape out the powder before throwing it away.
 2. Bend the wire to 180 degrees.
 3. Just throw it away—it will not fire anyway.
 4. Put it back with the others—it may work next time.
4. What is meant by caliber .30?
 1. The rifle is about 30 inches long.
 2. The model was adopted in 1930.
 3. This indicates the length of the cartridge used.
 4. Diameter of the bore 30/100 of an inch.
5. What are the principal targets for the antiaircraft machine gun?
 1. Low flying planes.
 2. Dirigibles.
 3. Enemy naval vessels.
 4. Bombers.

TRUE-FALSE STATEMENTS

DIRECTIONS. Place a "T" in the parentheses before those statements which are correct and an "F" before those which are wrong. Read each statement carefully. If any part of the statement is wrong, mark it "F".

(For 10-inch Batteries)

- () 1. At the command "Details, Posts" the members of the gun section procure their equipment and take their posts.
- () 2. The primer is inserted at the command "Home, Ram".
- () 3. The breech detail has nothing to do with the loading of the projectile or the powder.
- () 4. As a general rule, the even numbers in the gun crew are on the left and the odd numbers on the right.
- () 5. The command "Home, Ram" is not given for the projectile until the powder is in its place in the gun.

Nomenclature is tested by diagrams, and, while we have not been able to produce entirely satisfactory replicas on mimeographed sheets, the use of printed photographs will enable us to test this subject by exactly the same medium by which it is taught in most armories. Just how this was done in the oral examination in armories not equipped with model guns is still a matter of discussion.

The difficulties presented by this new method of testing are easily surmounted by the use of a little ingenuity. Certainly the task is no greater than that accomplished by a test which is already on the market, namely, the mechanical aptitude test which gives a very accurate prognostication of the examinee's chance of success in fields requiring manual skills of various types.

In its form, the present test is fairly accurate but still open to much improvement, and to this task we have set ourselves. However, the field of new type testing for gunners' examinations is still virgin territory.

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJOR GENERAL WILLIAM F. HASE
Executive

Personnel Section
MAJOR R. T. PENDLETON

Matériel and Finance Section
MAJOR R. E. HAINES
MAJOR O. L. SPILLER

Organization and Training Section
LIEUT. COL. E. E. BENNETT
MAJOR F. P. HARDAWAY

Plans and Projects Section
LIEUT. COL. G. A. WILDRICK
MAJOR G. R. MEYER
MAJOR R. V. CRAMER

Fort Monroe News Letter

BRIGADIER GENERAL JOS. P. TRACY,
Commanding.

COLONEL H. E. CLOKE, 2d C.A.,
Commanding Harbor Defenses of the Chesapeake Bay.

LIEUTENANT COLONEL ROBERT P. GLASSBURN, 51st C.A.,
Commanding 1st Battalion, 2d C.A.

COLONEL GEO. L. WERTENBAKER, 52d C.A.,
Commanding 1st Battalion, 51st C.A.

MAJOR J. F. KAHLE, 2d C.A.,
Commanding 3d Battalion, 52d C.A.

By Major Joshua D. Powers, 51st C.A.

UNDER Captain Cochran and Warrant Officer M. Quinto, our band has come up to the point where it can challenge any band in the service. A number of its members are in the Newport News American Legion Band which Mr. Quinto led to the National Championship at the American Legion Convention last year. It must have been the Legion uniform that inspired the nickel-plated helmets our band is now wearing.

In the early morning of December 29th, with a temperature of 28, and a 35-mile wind, the quarters occupied by Lieutenants Dave Latimer and Bill Dunham, caught fire, presumably caused by sparks from the chimney of an adjacent building. For a time it looked like nothing would be saved. Lieut. Latimer was in bed with the flu but in (furlined?) pajamas, superintended the removal of his furniture, and when the stairs were about to collapse, was still on the second floor. Several gallant friends dashed up to help him out, and to see if he was guarding any important possessions that he was afraid to entrust to the troops.

Incidentally, when the final check-up was made, not an article was missing, although jewelry, wrist watches, fountain pens, and similar objects were carried out. Where, in civilian life could one expect to find such honesty as was displayed by the soldiers?

According to Arthur's *History of Fort Monroe*, Quarters No. 3 was built in 1875, and as a result of the fire, is being modernized with CWA funds. The Army Co-operative Fire Association came through nobly with fire insurance. There were only a few arguments: On one four-year-old white cap, cost \$4.00, there was claimed \$4.00; some Bilibid furniture seemed to have appreciated with age like old wine, and there was some doubt about paying for screen wire installed around the porch. Seriously, the Army "Co-op" at Fort Leavenworth are delightful to deal with.

January and February at Fort Monroe usually mean gunners instruction; not that we have to stay indoors, but just to keep in step with the troops in the cold United States. This year we really had to stay in: with the moat and Mill Creek frozen over, and the old-timers saying that it was the coldest winter since 1917-18. We went ahead with the gunners' instruction, and also decided to catch up on Gas protection. Each battery was given a week of *intensive* work, all of the men being made available for that week. Captain Van Buskirk said: "Every time the men saw Lieut. Guiney come in sight, they put on their gas masks, even during mess."

Afternoons, the officers have been struggling with troop schools. Captain Adams has the advanced class in anti-aircraft gunnery.

The fifteen officers of the class of 1933 are taking the basic course. After Captain Hoge had them working for a week preparing menus and balancing diets for their mess management course, along came the COAST ARTILLERY JOURNAL a week late with complete ten-day menus prepared by Major Perley. Of all months to be late! If the JOURNAL had arrived on time much worry would have been saved these officers (and their wives).

In addition to their training in the basic troop school (and in home work), the lieutenants of the classes of 1932 and '33 are receiving intensive training in post administration. They each serve short details as assistants to the adjutants, the recreation officer, the post exchange officer and the artillery engineer. This course serves to orient the newly appointed officer, and make him more valuable to his own battery. As one officer said, it is a method of artificially aging these lieutenants.

We have just been informed that Captain Hohenthal is to be ordered to the Brazilian Antiaircraft Instruction Center (rumor says \$3,200 a year besides his pay). We heartily congratulate "Bill" on this detail, and foresee some strenuous work in store for him translating future positions and Sperry Directors into Portuguese. Hope he will write his experiences for the JOURNAL. Captain N. L. Adams is to replace him in the 13th C.C.C. subdistrict at Sugar Grove. This is once that "13" was lucky.

Everyone who has had to march a sentry post on a dark, cold night, carrying a heavy rifle, and with aching feet, will approve of the change inaugurated here by Major J. L. Hayden, the Provost Marshal at Fort Monroe (ex-same job at West Point). He figured that sentry on foot did not cover enough miles per hour, and hit on the idea of using bicycles. (Yes, we thought of motorcycles, too, but we do not have any—not even for traffic M.P.'s.) Three men on bicycles now cover the post, each by a circuitous route, and as they carry no lights, have a chance to slip up on the marauder (if there are any). Of course they do not always catch the criminal. Witness the burglary of the C. A. School Library, and the fellows who drained the gasoline from two of Lieutenant Kelly's trucks. And the best part of this "New Deal" sentinel plan is that the sentries carry time clocks which they punch at control points, so the O. D., instead of having to hunt them in the darkness just before reveille, can

check over their time-clock records at his leisure the next day.

As an example of coöperation between the Regular Army and the National Guard, Battery D, 111th F. A. (75-mm. horse drawn) the Hampton Battery of the Virginia National Guard, was asked to fire a salute at Williamsburg on February 24th, when the Governor of Virginia dedicated the restored colonial capitol. Captain W. Clark Thompson, who commands Battery D, didn't feel too optimistic about his horses making the forty-mile hike to Williamsburg and returning to Hampton on their own feet, so he thought he would see if there was anything in this idea of "Portée Artillery." He conferred with Captain Nyal L. Adams who has two big prime movers under test at Fort Monroe. Result: The guns and gun crews were entrucked in Hampton at 8:00 a.m.; in position at Williamsburg at 9:30 a.m., the salute was all over at 10:05, and everyone was at home in Hampton and Fort Monroe in time for a 12:00-o'clock dinner.

The first phase of the CWA ended on February 15th, with most of the \$300,000 allotment spent. The second phase started the next day, to last until May 1st. No definite sum was allotted for this phase, but 1,000 civilian employees were authorized, with the catch that the number must be reduced by 100 each week, so that at the end of the tenth week there will be none left. It certainly does make a complicated problem for Captain Harrington W. Cochran, and his assistants, Lieutenants Benz and Hawthorne, who are coördinating the CWA work with the PWA allotments and the routine maintenance of the post.

During the first phase, the clearing of the Big Bethel Reservoir watershed was completed—cost about \$24,000. Also new water mains were laid for about \$23,000. Now the water tastes much better. A suction dredge was built that cost another \$5,000. These are the chief projects that have been finished—others are still under way. The Officers' Beach Club and the Noncommissioned Officers' Club are rapidly being completed, and will be ready for use as soon as warm weather is here. The Officers' Club has been raised six feet off the ground, and then logs fitted under the existing log walls. Lieutenant Kleinmann is probably the first man that ever built log walls from the top down.

As soon as the weather is warm enough to pour concrete, work on the outdoor salt water swimming pool will start. This pool will have filtered salt water, flowing in constantly, with the intake at the bottom and constant overflow all around the top, thus carrying off any scum or germs, and assuring pure water at all times. There will be one section for children, where they can play in the water without danger of drowning or of being stung by jellyfish. The swimming pool will have underwater lights and overhead flood lights. With the new tennis courts and golf course adjoining the beach club, one will be able to stop by the pool after a game, or after a dance, and enjoy swimming before going home.



The new Noncommissioned Officers' Club at Fort Monroe, still under construction.

It was hoped that CWA men would be available to restore the golf course, which still needs a great deal of work to bring it back to the state it was in before the storms of last fall. However, the CWA men did not materialize, and we are falling back on troop labor. A committee consisting of Colonels Sutherland and Wertenbaker, Major Kahle, and Captain Van Buskirk have planned the new layout of the golf course.

Work has also been started on the south wing of Randolph Hall, which will provide six more bachelor sets of two rooms each, though at the rate the bachelors are getting married there will be no one to occupy this wing.

Extensive repairs have been made to the Casement Club—new floors, new plastering, new paint, and the billiard room completely rebuilt. As yet there has been no change in the bar, which is still the small bar for light drinks and the 3.2 beer. If, and when, officers' clubs are permitted to pass the 3.2 limit, there are rumors of a real bar in the section of the club beyond the billiard room. The rumor has gone out that this bar will be for men only, and the wives threaten dire things if that comes to pass. Now that not even a barber shop nor a Y.M.C.A. is a refuge from the gentle sex, it seems that a man in an officers' club should have at least one spot to which he can retreat, and where an irate wife or jealous sweetheart cannot pursue him.

Second Coast Artillery

ON February 8th, a farewell dinner was given by the men of Battery H in honor of Captain L. J. Bowler, who leaves shortly for the Philippines. Captain Bowler relinquished command of the Battery to Captain Riley E. McGarraugh.

In keeping with C Battery's normal work, antiaircraft, we have had the usual run of tests for the Coast Artillery Board. The three newest ones are the test of air brakes on the prime movers and on the bogies of the three-inch antiaircraft guns, the test of a new mechanism on the .50 caliber machine gun to change the operation, and lastly, a test of the functioning of a new type prime mover which is a combination tank, tractor, and truck.

C Battery has also received two 6-wheel experimental trucks, which are being passed from battery to battery for the purpose of testing whether or not they are suitable for all-purpose trucks. They might be, if it was not for the fact that they are very hard to operate, and are in very poor condition for any sort of test.

The battery presented Captain Adams with a very handsome Illinois wrist watch at a dinner given in his honor, when they learned that he was to leave.

Third Battalion 52nd Coast Artillery (Ry).

JANUARY and February, 1934, instead of being the usual "gloom" period of the year, were two of the

busiest and most interesting months for D Battery, 52nd C.A. (Ry). The barracks were, and still are, being completely renovated and repaired within. Several blow torches were purchased and the old paint removed from all woodwork within barracks—in fact the pungent odor of charred wood, fresh paint, and new plaster is familiar to every man in the outfit. The chief change consists of the enlargement of the kitchen into a larger, better ventilated room by the removal of the wall between the kitchen and the storeroom.

A week's instruction on chemical protection proved both interesting and unusual. Each day masks were worn to all routine duties and quickly donned at the alarm "Gas!" An attempt was made to march from barracks out to Battery Anderson while wearing the masks (about 2 miles) but the masks were removed several hundred yards short of the goal. The tunnel between the mortar pits was found to be an ideal place for actual tests with both smoke and tear gas. A strong concentration was built up within the tunnel and the men sent through it with and without masks. The use and effectiveness of the Army masks was understood and appreciated by all concerned.

Work on cleaning, painting, and maintenance of the R.R. material proceeded smoothly under 1st Sgt. Bryson's capable direction. Preparation for summer target practice consisted of classes conducted by the non-coms for the various gunners' degrees. Virtually the entire outfit expects to be qualified as first class gunners before next spring. A non-coms school was conducted by the battery officers each morning, the course consisting of subjects ranging from the manual of arms to fire control. The return of all men from C.C.C. camps and the addition of a dozen recruits has augmented the strength of the battery to 98 men. Several battery officers were detailed to supervise the weird and wonderful work of the colored C.W.A. gangs as they bathed the post office, dug holes, filled holes, and built obstacles across the principal streets of the post.

Of prime importance, as well as of common interest, was the step taken by the men of Battery F to begin work on the reorganization of the kitchen and adjacent rooms. This was one of the items recommended by the board of



The Fort Monroe Beach Club being rebuilt. Note the ice and snow on the beach.

officers who were detailed to draw up a plan for changing the design and layout of this part of barracks. This battery actually began work by combining two small store rooms into one large room and enlarging the doorway from dining room to kitchen. This will permit better access to the kitchen, especially during meals, as kitchen police and dining room orderlies are now able to enter through one door and exit through the other. New storage bins have been constructed and placed in the store room. These are not only quite serviceable but also pleasing to the eye.

Corregidor Notes

LIEUTENANT COMMANDER SKYLSTEAD, Executive Officer of the U.S.S. *Canopus* and a party of twenty naval officers from Submarine Squadron Five of the Asiatic Fleet visited Corregidor recently. Colonel Kerrick, Major Jones, Major Stuart, Major Perkins and Lieutenant Moss accompanied the party on a tour of points of military interest. The party stopped long enough at several of the batteries to witness short drills by the manning personnel.

A brigade review was held on Corregidor on Thursday, December 7th, in honor of the retirement of Technical Sergeant Fred J. Allen, Q.M.C. Colonel H. S. Kerrick was the reviewing officer and Colonel Clarence B. Ross, commanding officer of troops. All four regiments, 59th, 60th, 91st and 92nd Coast Artilleries and the provisional battalion, 31st Infantry, participated. A review of this size is a stirring sight in these times. Our parade ground is scarcely large enough to accommodate all the troops of the garrison.

For a number of years the Quartermaster department operated a transport on regular schedule from Manila to the Southern Islands. This service was discontinued about ten years ago because of the abandonment of posts in the Southern Islands. At the present time the only outlying garrison is a battalion of Philippine Scouts stationed at Zamboanga. During the time the transport was in operation many officers availed themselves of the opportunity to visit places of interest, but this practice was discontinued with the shutting down of the transport service. Colonel Kerrick has been instrumental in reviving the custom and popularizing this form of recreation. Plans are under way whereby it will be possible for officers to visit the Southern Islands and enjoy a two weeks' cruise on one of the inter-island boats. The first cruise scheduled was from February 1 to 14, when about fourteen officers and ladies made the trip. Scheduled points of call included Opon on Mactan Island; it will be recalled that this is a small island opposite the City of Cebu and is the location of Magellan's monument. It was here that the great navigator lost his life in a hand-to-hand fight with the natives. The second stop will be at the City of Cebu. After Cebu the regular boat schedule calls

for stops at Dumaguete and Bais. The next scheduled stop will be Zamboanga, probably the most beautiful spot in the Southern Islands. Strange as it may seem it is almost invariably cooler than Manila although several hundred miles nearer the equator. From Zamboanga the party will proceed to Cotabato with the possibility of a side trip to Davao and Siasi. The next point reached will be Jolo in the heart of Moroland, and the stronghold of Mohammedanism in the Philippines. From this place a trip to Sandakan, Borneo, is planned. The return voyage will be over the same route except that the side trips will be omitted.

The second cruise is scheduled to start on February 15, while the third cruise will take place in April after the close of school. A trip is being planned exclusively for the enlisted personnel, and approximately seventy-five men have already signed up. The total cost of the trip for transportation and board is less than \$50.00 for fourteen days. Not only are these trips recommended for their inexpensiveness but more especially because of the fact that they provide an opportunity for officers to gain a first-hand knowledge of the geographical features of the islands, their people, customs, industries, resources and scenic beauty; it is hoped that they will become increasingly popular and that they can be made a regular part of the recreational activities for the American garrisons.

It will undoubtedly be of interest to all former inhabitants of Corregidor to learn that street car service is now in operation on an hourly schedule from Bottomside to Kindley Field. A new officers' swimming beach has been completed at Infantry Cove on the Manila Bay side. This, in conjunction with the old swimming beach at Kindley Field should provide suitable swimming facilities throughout the year. These improvements add greatly to the comfort and contentment of the garrison.

Fort MacArthur Notes

By *Lieut. Lee A. Denson, C.A.C.*

THOSE of you who have been stationed at Fort MacArthur will not know it for the same place when you return for station here. The post today has much of the aspect of a section of the Western Front just after a barrage had descended upon it preparatory to a drive.

Most of the Lower Reservation is a mass of trenches, and the trenches are full of mud and water, too, for believe it or not, sunny California has been deluged by rain for the last ten days; and the men who dug the trenches are C.W.A. workers, most of whom are overseas veterans. When the smoke (?) and mud (no question) of battle clear away, however, Fort MacArthur will emerge as one of the most beautiful posts of the Army.

The parade ground, eleven acres in the heart of the Reservation, will have been completely renovated. The work includes harrowing, disking and plowing; place-

ment of more than three thousand cubic yards of sand and top soil; planting to lipia grass, and the planting of a border strip two hundred yards deep fronting on Pacific Avenue to lawn grass. The parade ground, as well as the ground surrounding quarters and barracks bordering upon it, will be amply supplied with water through an extensive post sprinkling system now being installed.

More than forty additional ornamental date palms, donated by the City of Los Angeles and local citizens, are being set out to supplement those now on the post. A four-hundred-yard hedge of *tecoma capensis*, green with a brilliant red flower, has been set out in rear of the officers' line, while across the road in rear of the officers' quarters have been planted a sufficient number of citrus trees to keep the entire line supplied with oranges, lemons, limes, grapefruit, kumquats and tangerines. Progressive future beautification of grounds throughout the post is being provided for by a post beautification plan being drawn up by Mr. James F. Lewis, local landscape architect. This plan, followed down through the years, will guarantee a more beautiful Fort MacArthur.

The Service Club at Fort MacArthur (of the well-known wooden wartime construction type) has been unbelievably transformed by the installation of an arched ceiling of celotex and indirect lighting, at a moderate cost.

Other post improvements include: the placing of all overhead lighting and power lines underground; widening of roads, improvement of drainage; building of sidewalks; and extension of warehouse facilities.

Seven new double sets of noncommissioned officers' quarters, described in this column for November-December, 1933, are at this writing 70 per cent complete. It is

expected that all will be completed and ready for occupancy early in May, and it looks as though our effusions as to their appearance and livability will be more than justified.

The training activities of the 63rd Coast Artillery, with the release of officers and men from C.C.C. duty, have proceeded under full steam during February. A number of battery over-night marches with tactical problems in conjunction therewith have been conducted. On February 23rd-24th, three batteries of the 63rd C.A.—Headquarters, "B" (guns) and "E" (machine guns)—conducted a combined march and tactical problem from Fort MacArthur to Ross Field and return. The problem involved the defense of a regiment of tanks on the march by an anti-aircraft gun and machine gun battery. Two sections of Headquarters Battery proceeded by a central road, representing the tanks, while "B" and "E" Batteries, marching on parallel roads, provided anti-aircraft defense from Fort MacArthur to and through La Brea Canyon, a distance of some twenty miles. Lt. Col. Homer R. Oldfield, Regimental Commander, conducted the problem, while Captain D. B. Greenwood, 63rd C.A., commanded the anti-aircraft defense. Some twelve officers and 250 men of the 63rd C.A. engaged in this problem.

Battery A, 63rd Coast Artillery (searchlights), was just about ready to take off for March Field for one month's annual searchlight training when the call to the Air Service to take over the air mail temporarily suspended activities.

Plans for the annual two weeks' training march of the 63rd Coast Artillery are tentative as yet, but it is expected that this march will take place in April. Of this, more in our next.

Much Activity at Fort H. G. Wright

BY LIEUTENANT NORMAN FORD, C.A.C.

DESPITE its isolated location and the severe winter climate, Fort H. G. Wright, commanded by Colonel William H. Wilson, is amazingly active. This post is the headquarters of the Harbor Defenses of Long Island Sound, the 11th Coast Artillery and of the 5th Civilian Conservation Corps District, comprising all C.C.C. camps in the State of Connecticut.

Ever since the first contingent of 3,500 C.C.C. enrollees began arriving in April, 1933, all facilities of the post have been hard pressed in the work of enrolling, vaccinating, inoculating, clothing, housing, feeding, and supplying the fourteen camps in the field. One company, the 190th, remains at Fort Wright for the supply and maintenance of the companies in the field.

The 179th Company of this district was selected as the outstanding company in the First Corps Area, and the winner of the *Army and Navy Journal* award for the

second enrollment period. This company is commanded by Lieutenant (JG) Richard E. Hawes, U. S. Navy, who won prominence several years ago for his excellent work in connection with the raising of the submarine S-51.

CONSTRUCTION ON THE POST

Captain D. R. Wolverton, Quartermaster Corps, is a busy officer with the many projects coming under his supervision as constructing quartermaster. A contract for seven single non-commissioned officers' quarters has been awarded, and the exterior work of four of these is practically completed. Work has been started on a four-family officers' apartment house and two single officers' quarters. New curbs have been made on each side of the main roads throughout the post. The post dock has been completely rebuilt and the boat harbor is being dredged. In the work of painting, repair and road work, over 200

C.W.A. workers have been employed under Captain Wolverton.

ATHLETICS

Beginning with intramural football last fall the regiment has come through a full and varied athletic schedule and has shown excellent spirit in participation in sports despite the duties required of the personnel. Battery K won the post championship in football by winning all of its games.

Duckpins and basketball began the winter sports season in each of which five teams entered the league. Again, K Battery won both leagues. Additional activities of the winter were indoor track meets and a post basketball team. Cups are awarded to winning batteries and individual letters to qualifying members of teams. Under Colonel Wilson, Lieutenant Ford, Athletic Officer, and Lieutenant Ward, Recreation Officer, have cooperated to advance athletics to their utmost at Fort Wright.

Hawaiian Separate Coast Artillery Brigade News Letter

BRIGADIER GENERAL R. S. ABERNETHY, *Commanding*
CHIEF OF STAFF, LIEUT. COL. F. Q. C. GARDNER, C.A.C.

S-1, LIEUT. COL. W. V. CARTER, A.G.D.
S-2, CAPTAIN E. T. CONWAY, C.A.C.

S-3, LIEUT. COL. A. G. CAMPBELL, C.A.C.
S-4, MAJOR FREDERICK A. MOUNTFORD, C.A.C.

By Lieut. J. R. Lovell, C.A.C.

THE Hawaiian Department Commander's Coast Artillery Cup was awarded to the 64th Coast Artillery for the year 1933. The presentation was made by Major General Briant H. Wells, the Department Commander, at a Brigade review at Fort Shafter, January 18, 1934. General Wells personally presented the cup to Colonel Willis G. Peace, the new Regimental Commander of the 64th Coast Artillery. The guidons of each of the firing batteries were also decorated with appropriate gold streamers.

The Department Commander's Cup is a trophy which is competed for each year by all the Coast Artillery organizations in the Hawaiian Department. The award is based on results of target practice, qualification of gunners, participation in tactical exercises, etc. Competition for this trophy was very keen during the year 1933, and the victory of the 64th Coast Artillery in winning this trophy was a well-merited one.

The Brigade review was a creditable and impressive one. Approximately 3,000 men and officers were in formation. The Brigade was formed in line with line of battalions in column in close columns. Brigadier General Robert S. Abernethy commanded the Brigade and rendered the honors to Major General Briant H. Wells. The Regimental Commander, all colors, and the guidons of the 64th Coast Artillery were marched front and center to receive their awards. The Brigade then passed in review.

Many distinguished persons were present in the reviewing stand, including the Governor of the Territory of Hawaii, and Mrs. Lawrence M. Judd, Rear Admiral and Mrs. Harry E. Yarnell and their staff officers and ladies, Rear Admiral A. W. Johnson and his staff, and many civilian dignitaries and officials. Tea was served informally by Mrs. Briant H. Wells at the Department Commander's quarters immediately after the review.

RECREATION

Recreation officers, chaplains, and battery commanders are constantly on the alert for anything that will entertain the personnel and influence the morale of the men for the better. As a result, at least one unofficial orchestra and several vaudeville acts have been developed that are worthy of mention. The Hill Billy Orchestra of Fort Ruger, consisting of guitars, ukuleles, banjos, violins, and mouth organs, have developed into an organization that is very much in demand as an entertainment feature. This orchestra, consisting of enlisted men of Colonel Harry L. Steele's 16th Coast Artillery, has conducted several programs over the radio stations in Hawaii.

Other entertainment features worthy of mention are Mather and Stanley, a comedy team; Olinger and Novotksy, a black-face team; Soliere, a crack tap dancer; Stevenson, singer of humorous songs; and Coles and Lee, a hick dancing team. Major Gynther Storaasli, Chaplain at Fort Kamehameha, has been particularly interested in the development of this fine entertainment.

ATHLETICS

Fort Kamehameha scored a sensational victory in the Honolulu Sector Boxing League, by nosing out Fort Shafter in the final smoker, after a very spirited competition in which Fort Shaftner led throughout the entire season. The final score of the competing teams is as follows:

Fort Kamehameha	1170
Fort Shafter	1120
Harbor Defenses of Honolulu	705
Luke Field	200

The writer takes this opportunity to publicly congratulate Fort Kamehameha in winning the Honolulu Sector Boxing Championship for 1934. The sportsmanship displayed by all boxers and their handlers during the entire

league season is worthy of commendation. It is significant that not a single boxer was disqualified during the whole tournament as a result of a foul.

Basketball is coming into its own again this season in the Sector Navy Basketball League. Teams are well matched, and are playing a good brand of basketball.

NEW COMMANDING OFFICERS

Colonel Willis J. Peace and Avery J. Cooper have arrived in the Hawaiian Department and have assumed command of the 64th Coast Artillery and the Harbor Defenses of Pearl Harbor respectively. Many receptions and informal parties have been held honoring the new commanding officers and their ladies.

DIVISION REVIEW

The Governor of the Territory of Hawaii, Lawrence M. Judd, and the Governor-Designate of the Territory, Joseph B. Poindexter, were jointly honored by the United States Army in Hawaii, when a division review was held in their honor at Scholfield Barracks, Saturday, February 10, 1934.

The setting was an ideal one. Spring rains had changed the turf to a velvety green, and the bright Hawaiian sun shone in a cloudless sky. The polished brass, the burnished steel, and the flash of the colors across the field provided a most colorful spectacle.

The 21st and 22nd Infantry Brigades, the 11th Field Artillery Brigade, and all special troops including the Signal Corps, Engineers, Tanks, Chemical Warfare, and the Air Corps passed in review before the two rulers of Hawaii.

After the review ceremonies had been completed, the Air Corps ascended to an altitude of about five thousand feet and formed the letters "J" and "P", honoring the present governor and the governor-designate, The Honorable Lawrence M. Judd, and Joseph B. Poindexter. By means of short-wave communication, squadron commanders reported to their Excellencies as they passed in review. This communication feature made a big hit with the dignitaries.

Thousands of people from all over the Island of Oahu attended the ceremony. In spite of the Division Commander's orders, a number of canine mascots were present in person and passed in review to pay their respects to the two governors. Of course, at times they were hard pressed by MP's, but having been pressed by MP's before, they had no difficulty in eluding them.

The United States Army, represented by Major General Briant H. Wells, congratulated the Honorable Lawrence M. Judd on his successful tenure of office; and to the Honorable Joseph B. Poindexter he extended best wishes for a successful term in the important chair of the Governorship of Hawaii.

MAKERS OF AMERICAN HISTORY

A number of officers of the Hawaiian Separate Coast Artillery Brigade have been participating as members of

the cast presenting a series of radio plays entitled "Makers of American History." This is the same series of plays that was broadcasted over the National Broadcasting System on the mainland. The episodes are interesting sidelights and important events taken from the pages of an American history book. The series has developed a large following among the radio listeners of the Territory, and many complimentary letters have been received. These inspiring patriotic dramas are being broadcasted through the courtesy of KFI, Earl C. Anthony, Inc., Los Angeles, California.

Officers who have been members of the cast are as follows:

Captain James A. Ryan, C.A.C.
 Captain Nelson H. Duval, C.A.C.
 First Sergeant Everett C. Corn,
 Lieutenant Wilbur R. Skidmore, C.A.C.
 Major George F. Unmacht, C.W.S.
 Major David Anderson, British Army,
 Major Harlan J. Valentine,
 Master Sergeant Arthur W. Holt,
 Captain Vivian M. Culver, M.I.-Reserve.

PERSONALS

Major and Mrs. Joseph D. McCain and First Lieutenant George F. Pierce passed through Honolulu recently en route to their new station in the Philippine Department. They met many of their old friends in Hawaii.

Among those who are scheduled to leave Hawaii the next few months are the following:

64th Coast Artillery, Fort Shafter:
 Major William M. Goodman,
 Captain James R. Townsend,
 Captain Arthur V. Winton,
 Captain William R. Carlson,
 First Lieutenant James G. Renno.

Harbor Defenses of Pearl Harbor:
 Major Austin G. Frick,
 Major LeRoy Lutes,
 Lieutenant Colonel Henry W. T. Eglin,
 Captain Harold G. Archibald,
 Captain V. P. Foster,
 Lieutenant Clarence E. Rothgeb,
 Lieutenant John W. Dwyer,
 Lieutenant Ola A. Nelson,
 Lieutenant William I. Brady.

Harbor Defenses of Honolulu:
 Major Monte J. Hickok,
 Captain Arnold D. Amoroso,
 Lieutenant Charles M. Wolff.

Brigade Staff:
 Lieutenant Colonel W. V. Carter,
 Major Frederick A. Mountford,
 Captain Edward B. Schlant,
 Captain E. T. Conway.

It is expected that captain William F. LaFrenz, of Fort Ruger will be assigned to the Brigade Staff as S-2 and Gunnery Officer to replace Captain Conway.

Panama Canal Department News Letter

Department Artillery Officer
COLONEL PERCY M. KESSLER, C.A.C.

Fort Amador
COLONEL RUSSELL P. REEDER,
4th C.A. (AA)

Fort Sherman
COLONEL CLARENCE G. BÜNKER,
1st C.A.

Fort Randolph
COLONEL RICHARD I. MCKENNEY,
1st C.A.

THOSE of you who have been lucky enough to have been stationed at some time or other in the Panama Canal Department know what it means to go through the Carnival Season, as celebrated in all Latin American countries. We here in Panama have just finished the season of the "Pollera" costumes, coupled with a few hours' sleep snatched between evenings at the good old Union Club. Does that bring back any memories?

Unfortunately this same season is also one of the busiest times of the year, tactically speaking. We are just now in the throes of preparation, not only for the annual tactical inspection but also for the coming maneuvers, when we all go out and allow the ticks and the redbugs to enjoy their annual banquet.

As a preliminary to the regular Department maneuvers, we had forced on us during the month of January a combined Harbor Defense and Antiaircraft maneuver, in which the doughboys, the engineers, and the field artillery participated as well as your good old C.A.C. Of course diplomatic relations with the Reds were severed and the A.A. defenses were manned by the combined arms. Besides forcing back the aircraft attacks on the canal, the thoughtful enemy attempted a landing in the early morning hours which brought into play not only the seacoast boys, but the gallant infantry ably supported by the field artillery. Fortunately for poor old G Battery of the 4th C.A. (AA) (Inf.) an A.A. battery is near by their seacoast guns, so they were called upon (usually in the wee small hours) to vibrate between the manning of Sperry-directed A.A.'s or their beloved railway guns.

It is too bad that so much of it is secret and cannot be contained in this news letter, but I can say that it was very interesting and instructive for all concerned.

We were sure that we were getting a great deal of infantry training in preparation for the coming maneuvers so the designation above "4th C.A. (AA) (Inf.)" is placed advisedly. After reading the dope sheet from our Atlantic Side correspondent I am inclined to term them "1st C.A. (AA) (Inf.)" So, during the prospective encounters next month, we hope to out-doughboy the doughboys.

Last month we finished our antiaircraft school for all officers of the grade of captain and below. During this school, the officers concerned were given the theory of antiaircraft gunnery, fire-control and adjustment. They were then taken to the guns where they actually manned

all the key positions in both the range sections and gun sections, as well as the positions normally held by officers. A series of target practices were then held. This month we are just finishing a similar school in seacoast gunnery. Major J. T. H. O'Rear is the senior instructor with Phil Talliaferro, Bill Gower and Parry Lewis as the assistants. The class-room work covered the theory of gunnery with adjustment problems by all methods at moving targets. The practical work consisted of firing (sub-caliber) various batteries from the big babies down to include the 155's. As a result of these two schools we feel that the officers of this command have a pretty practical grounding in the various types of gunnery.

So much for the Pacific Side of the Canal. Let's hop on the train and take a trip to see our Atlantic Side brothers: The new year found the First Coast Artillery engaged in its customary tempo of interesting activity. In addition to the usual garrison duty and training, all troops in the Atlantic Sector, including all animal and motor transportation, were reviewed by the Sector Commander, Colonel James V. Heidt, 14th Infantry, at France Field on January 20. Although this was the first Sector review since the previous dry season, a very smart garrison review was witnessed by a large and appreciative turnout of the civilian population and service families.

A few days later, Brigadier General Lytle Brown, former Chief of Engineers, arrived to take command of the Atlantic Sector. The companion regiment in the Sector, the 14th Infantry, turned out a splendid battalion as an escort of honor, when General Brown stepped off the transport *Republic*. The next day all Sector troops were alerted, equipped for field service and marched to France Field, where a formal brigade camp was pitched. General Brown reviewed his new command in field uniform the following morning, and then a practice march, after which all troops returned to their home stations.

At 1:00 a.m., January 29, the Harbor Defenses of Cristobal were alerted for an early morning (night) drill under a cloudless and starlit sky. The old 14th Infantry, which alternates as friend and enemy in the tactical exercises, this time came bravely to the aid of the gallant 1st, as beach defenders.

Some days later all Sector troops passed the new Sector Commander in a formal garrison review, which, so they say, was equal in military excellence to any like demonstration ever put on by the military establish-

ment. Having shown what could be done as parade ground soldiers, our next stunt was to demonstrate our ability as jungle warriors. Three days were spent on this duty. After having pitched camp on the Fort Randolph parade ground, close to the 14th Infantry; peaceful slumbers were interrupted in the dead of night when the First C.A. was secretly ordered to march out into the dark, dank jungle and take up a defensive position ready to meet all comers. The doughboy pals of the 14th Infantry who were left sleeping peacefully, this time turned traitor and deliberately attacked us without warning, rudely enveloping our left flank. However, revenge is sweet, for the following night the 14th assumed the defensive (less one battalion) and with this detached battalion combined with the "First Coast," we attacked the defending infantry on the third morning. By warning them to look out for a penetration through right guard, we sprang a big surprise and slipped the entire 2d Battalion around their right flank, captured their field kitchens and were about to eat their breakfast when recall was sounded.

After a few days' rest at home stations we were again called out on February 16, by the Department Commander whose orders are to march to Fort Davis equipped for extensive field service. It looks like another week of warfare against ticks and redbugs, and worse still against our treacherous companions, the 14th Infantry. With this campaign behind, we will go home to our first love, good old "Auntie" Aircraft.

When you read between the lines and make some visual calculations as to the painful hours of preparation

for all these various duties and the hours of drill and training spent in seasoning the troops for flights at odd moments in to seacoast, anti-aircraft, and doughboy, I hereby invite anyone who desires to increase his professional knowledge to apply immediately for service in this Department. The opportunities afforded an officer or an enlisted man who is interested in his profession has wonderful opportunities here to increase his military training.

However, all work and no play makes Jack a dull boy, we find time in the evenings every now and then to get together and forget our troubles. "Spud" Spalding, as major domo of the Officers' Club, has engineered some pretty nice parties in the old Post gymnasium. As a diversion, the next gathering to be given will be managed by the officers of the 2d Battalion, 4th C.A., and we hope to make it an outing on the beach of Taboga or Taboguilla. Spud has used the old bean in having a different battalion "sponsor" each monthly festivity. Of course, this makes it much easier for the major domo of the club—the "sponsors" do all the work.

"Tony" Lazar is doing wonderful things with the Post baseball team this season. The battery league was greatly delayed, due to the prolonged rainy season, but B Battery of the Fourth came through with flying colors and now the Sector League is in full sway. Tennis is becoming increasingly important with the enlisted men and before long we hope to develop some rising Bill Tildens. Cort Schuyler is the outstanding star of the officer's league—at present writings.



NEWS AND COMMENT

Army Control is Best Way to Run CWA

THE blame rests rather with the Government in not foreseeing the inevitable abuses. But though it lacked a national civil service adequate to administering the fund in every community it had an army service thoroughly competent for the work, and the work itself would have been excellent peace-time service for the army organization.

That is not too late a thought, and the more it is considered the more it commends itself.

An Army administration would put immediate end to the graft, corruption, incompetence and waste which have characterized the CWA in so many of its undertakings.

Army control would be specially trained control.

It would give honest and efficient service in place of the inefficient and not always honest service of politicians.

Millions and millions of dollars have yet to be spent relieving unemployment and furnishing useful and necessary civil works. Every cent should be spent for the purpose intended and that purpose only.

To insure this there is no better way than that of giving the Army immediate charge of the CWA *all over the nation, and not merely where corruption and incompetence have made such control a national necessity.*

The Army is conspicuous for its efficiency and its honesty is not even to be questioned. An outstanding monument to both is the Panama Canal, constructed under the direction of Major General Goethals.

Whenever and wherever there is a great job to be done in the way of public construction Army supervision will insure both scrupulous honesty and the highest standards of efficiency.

Army men are trained in patriotic loyalty to the Government and the people.

Let the Army do it and it will be well and honestly done.

Note: Extracted from an editorial appearing in the *New York American* under date of February 9, 1934.

Foreign Service Cannot be Shortened by Giving Up Leave of Absence

MANY requests are received in the War Department from officers who have left their foreign service stations on leave of absence several months prior to the expiration of the tour of duty. These officers usually request permission to surrender the unused part of their leave and report to their new stations or assignments for

duty. In every case these requests have been disapproved for the reason that to grant them would operate to reduce the tour of foreign service below that prescribed by regulations. For example, if an officer applies for terminal leave of absence and departs from his foreign service station three months before the expiration of his tour of duty then upon arrival within the United States surrenders a part of his leave he has, in effect, shortened his foreign service tour by the amount of surrendered leave. This procedure is contrary to regulations and in no case will the request be granted. It is, therefore, useless for officers to make application to report to their new station before the full expiration of their foreign service tour.

Why Not a Pay Day Each Saturday?

The Editor,

THE COAST ARTILLERY JOURNAL,
Washington, D. C.

Dear Sir:

Apropos of Lieutenant Kelly's article on "I Will Gladly Pay Tuesday for a Hamburger Today," which appeared in the January-February issue of the JOURNAL:

We heartily agree with Lieutenant Kelly and all that he has to say about the beauty of thrift. His suggestion that a soldier take real money and spend it for coupon books rather than for wine, women and taxis is just too Utopian. How many officers with all their West Point and Leavenworth training do such—that is, keep ahead a month's pay, and take advantage of cash discounts instead of paying substantial interest to the Federal Finance Corporation every time they buy a new car?

The old sergeants say you just can't make a recruit lay out two silver dollars for a barber ticket—that there is nothing more inalienable than the soldier's right to spend his money as he pleases. You can order him to buy high-laced boots, tailor-made caps, white shirts, and he will not murmur, if he can buy them on jawbone, but try to get him to pay cash for them and his moans will reach to Heaven—and to Congress. In this case the latter is the more important.

Do commercial concerns hiring men for from \$5.00 to \$25.000 per week allow them credit at five or six stores, and run collection sheets that are like a stock exchange report? They do not. Nor do they expect these men to conserve a month's pay and make it last them a month. They pay their men once a week, and when the Army pays the troops the same way we can cut out the jawbone, do away with the collection sheets, and not make pay day a holiday in the Army, when not even the most

sanguine expect any work to be done. Then if the soldier needs a hair-cut, razor blades, shoe polish, etc., he can go out and get it. If he slips up, it is only a week until he draws more pay.

Right here I distinctly hear a loud chorus of voices raised in protest. With a unanimity that is astounding they explain: "We could never make up the payrolls and extend them in a week—why now we barely do it in a month!" Well, how about really simplifying this Army pay system? Here are the suggestions:

Drop all fogies, expert gunners' pay, specialist ratings (the economy act has slashed them pretty hard anyway).

Abolish all fines as court-martial punishment. After all, if a man works for the Army, either in the guard house or out, he should get a minimum day's pay. Ask Frances Perkins or General Johnson if you do not believe me.

Adopt a weekly pay schedule of pay something like this:

Master Sergeant (and of course a First Sergeant should rank with, and receive the pay of, a Master Sergeant): \$38.00.

Technical Sergeant: \$26.00.

Staff Sergeants: \$21.00.

Sergeants (Private first class to receive pay of Staff Sergeant; these Pfc's. to include head cooks, chief clerks, generals' chauffeurs, and such): \$17.00.

Corporal (Private second class to receive pay of Corporal; these to include second cooks, clerks, telephone operators, chauffeurs, mechanics, and any others you care to add): \$13.00.

Privates, third class (This to include all privates of excellent character who have qualified as expert gunners or expert riflemen): \$9.00.

Privates, fourth class (This to include all privates of excellent character who qualified as first class gunners or sharpshooters): \$7.00.

Privates, fifth class (This includes all others): \$5.00.

These rates work out quite close to our present rates, remembering that the higher grades now get some fogies, and should get gunners' pay, and of course neglecting the 15 per cent cut.

You notice that the minute a private third class or a private fourth class ceases to have an excellent character, he drops down to the basic pay schedule of \$5.00 per week. Think what a power that gives the battery commander, and how it will cut down the work of the investigating officer and of the courts.

Any changes in ratings, promotions, or reductions, to take effect the first day of the following week.

Then consider how easily a pay roll could be made out, and how fast an organization could be paid—after Saturday inspection, and before officers' call—of course a man who goes AWOL or gets venereal disease during the week will not be paid that week, but the pay roll can be made out and signed the first of the week and the rest of bat-

tery will have a chance to spend a normal week-end with money in hand that they have received in cash. If there are any Scotchmen or Hebrews in the outfit, they can deposit their money just the same as they do now, and of course there will always be the same percentage of craps shooters, but the excitement and headaches of pay day will be spread out harmlessly over week-ends, instead of hitting a body punch whenever the last of the month comes.

Sincerely,

EX-CAVALRYMAN.

More About the Same Thing

I'VE just finished reading Paul Kelly's monograph on thrift in the last issue of your JOURNAL. Without prejudice to any others, I believe this to be the most constructive contribution I have seen for a long time. I suppose it is almost too much to hope that thrift will be added to the soldier's curriculum, though times are propitious to such an enterprise. But Paul's suggestions are certainly good enough to merit taking root somewhere.

Cordially yours,

RAYMOND B. BOTTOM.

Paging Ethel

QUICK, Watson, the needle and the Ouija Board! It is seldom that the JOURNAL is called upon to play the rôle of a detective, but we advertise "Service to the Corps" and we always try to back our promises. We confess that in the present instance a new one has been sprung and we do not know how to solve the problem. We have consulted precedent but nothing that has happened in the long history of the COAST ARTILLERY JOURNAL helps in our efforts to locate the missing Ethel.

It seems that for several years the Secretary of the Fort Monroe Club has been carefully guarding a silver vanity case inscribed on the outside as follows: "Ethel, 1922," while on the inside is found a small picture of a very attractive young lady, age about eight summers (Ethel is probably a big girl now, we hope she sees this). At any rate, the secretary, weighted down by his other responsibilities, feels that he can no longer bear up under the added burden of guarding this treasure while waiting for the owner to claim it, hence he has sent it to the COAST ARTILLERY JOURNAL with the request that the facts be made known so that the "quick repair kit" can be returned to its rightful owner.

This looks to us like a plain case of shifting responsibility and we may have to change the combination on the office safe. At any rate if any "Ethel" will lay claim to the long-lost vanity case and send a few cents in stamps together with a general description, we will be more than pleased to forward it and to be relieved of the responsibility thrust upon us. No questions asked, first come, first served.

COAST ARTILLERY BOARD NOTES

Any individual, whether or not he is a member of the service, is invited to submit constructive suggestions relating to problems under study by the Coast Artillery Board, or to present any new problems that properly may be considered by the Board. Communications should be addressed to the President, Coast Artillery Board, Fort Monroe, Virginia.

THE COAST ARTILLERY BOARD

COLONEL A. H. SUNDERLAND, C.A.C., *President*

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CAPTAIN E. T. CONWAY, C.A.C.
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SECTION I

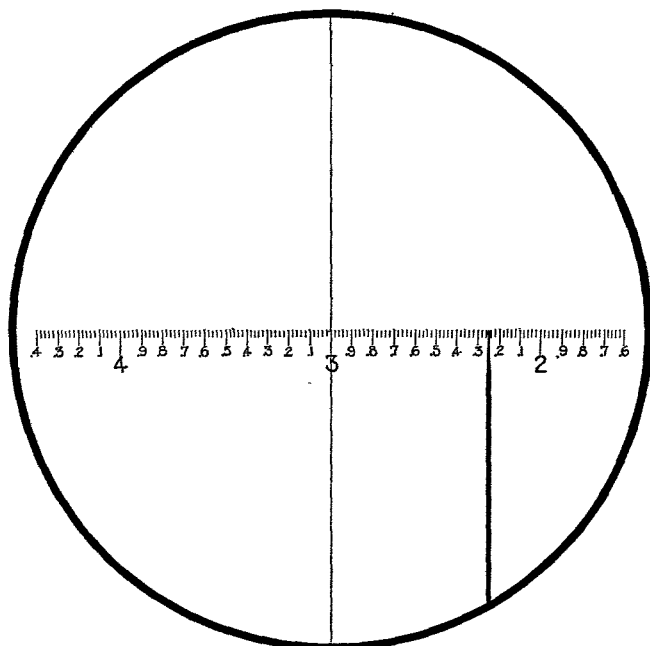
Projects Completed Since the Last Issue of the Journal

PROJECT NO. 608—DUCO SURFACING FOR GUNS.—At the time of publishing the last issue of the JOURNAL, a report was in preparation concerning the use of Duco and other surfacings for seacoast guns and carriages. That report recommended dropping "Duco" from further test, but it was recommended that further tests of other paints be conducted. The Chief of Coast Artillery approved this recommendation. The test of paint for guns is being conducted under Project No. 990. In this test one new paint; namely, Non-Oxite, is being tested in comparison with standard O. D. paint, Dulux and standard O. D. paint mixed in a new way. Inasmuch as this test has not even been started, it will be some time before a report thereon can be made.

PROJECT No. 968—PREPARATION OF COAST ARTILLERY MEMORANDUM NUMBER FOURTEEN.—As previously stated, this is a memorandum issued each year, giving the results of target practices throughout the service. The new memorandum is very similar in form to the previous annual issues. In the preparation of this memorandum all target practice reports, National Guard included, were carefully scanned, but due to instructions to the effect that the size of the publication must be reduced, only the most pertinent features were extracted from all these reports. It is believed that it can safely be stated that the firings during the target practice year ending June 30, 1933, showed improvement over previous years. However, this improvement was not so evident as it might have been for the reason that certain batteries, picked because of their proficiency, were permitted to fire special practices and the scores of such practices were not considered in the general comparison of practices. This memorandum was prepared at this time so that it will be in the hands of troops by July 1, 1934, in order to assist battery and other commanders in their target practices for the latter half of the calendar year 1934. Recent

instructions have made the target practice year coincide with the calendar year. In order to put the ammunition allowances in step with this new regulation, the Secretary of War has permitted an allowance of ammunition for the period July 1, 1934, to December 31, 1934, of about half the usual annual allowance. In this connection, it might further be stated that the Coast Artillery Board is just completing, for the action of the Chief of Coast Artillery, a proposed draft of a War Department Training Memorandum, which is to include instructions to govern firings with this reduced allowance. This memorandum takes the place of the publication formerly called "The Annual Letter."

PROJECT No. 980—MODIFIED RETICLE SPLASH SCALES, MODEL 1910 AZIMUTH INSTRUMENT.—As stated in the last issue of the JOURNAL, the Coast Artillery Board has been seeking an improvement in the reticle of the 1910 azimuth instrument. The report on this project recom-



Modified Reticle Splash Scale

mends that the new reticle be provided and that it be graduated as shown by the figure below. The heavy vertical line in the figure shows the new pointer. The reticle itself is etched on a plain piece of glass. This reticle is believed to be a decided improvement over the old opaque splash scale now in use.

PROJECT No. 981—ANTIAIRCRAFT DIRECTOR T8E3.—This was a test to determine the action of certain improvements made by the Sperry Company on their Antiaircraft Director T8. The modifications were found to remedy certain defects that appeared in earlier designs. In this connection, it can be stated that the Coast Artillery Board feels that improvements can be made in the antiaircraft director as it stands today, and that studies along these lines should be pushed to the utmost. It has not been shown yet that the principles of the Lewis-Trichel director cannot be extended to the antiaircraft problem.

PROJECT No. 992—ACOUSTIC CORRECTOR M1E2.—The new acoustic corrector, known as the M1E2, has been developed at Frankford Arsenal. At one time it was recommended that the acoustic corrector be removed from the sound locator and combined with the comparator, but such change was found to be impracticable. The new instrument, designed to be mounted on the sound locator, is found to be rugged in construction, light in weight, and quiet in operation. The rate multiplying mechanism appeared to offer distinct improvements over previous models. Two members of the Coast Artillery Board inspected the pilot model of this instrument recently at Frankford Arsenal. As a result of this inspection, the Coast Artillery Board recommended minor modifications in the mechanism, and further recommended that this corrector, when modified, be adopted as standard to replace the present standard corrector.

PROJECT No. 944—COOLING SYSTEM, STABILIZER, AMMUNITION CHESTS, RETRACTION SLIDE—.50 CALIBER MACHINE GUN.—A machine gun with ammunition and the accessories indicated in the title were shipped to Fort Monroe and the Coast Artillery Board, assisted by certain representatives of the Ordnance Department, tested the gun.

One of the principal features of the test was to determine the relative advantages of the 300-round ammunition feed box and the 200-round box. Other things being equal, it was thought that the 300-round box was preferable to the 200-round box because, in the general case, if ammunition boxes are required to be changed during a target course, it is very probable that no ammunition will be fired from the second box. It was found that the 300-round box was so heavy that it threw the gun mount out of balance seriously and, at some angles of approach, it interfered with the gunner's view of the target. Recommendations were made in favor of the 200-round box. The Board's report also included recommendations that the retraction slide assembly be utilized in guns to be manufactured in the future, and that, if the cost is not

too great, the new retraction slide be installed on M1 guns. It was further recommended that the water box, with the improved circulating pump, be adopted as standard.

SECTION II

Projects Under Consideration

PROJECT No. 929—EXPERIMENTAL FIELD CHRONOGRAPH (JACKSON).—There is nothing on this subject to be added to the statements last appearing in the JOURNAL. The bad weather which has prevailed throughout the winter has probably interfered with any tests the Chief of Ordnance may have desired to carry out on this instrument at Aberdeen Proving Ground.

PROJECT No. 947—TESTS OF OIL CLOTHING FOR USE BY ARMY MINE PLANTER PERSONNEL.—A report has been received from the Commanding Officer of the Cable ship *Joseph Henry* concerning the use of this especially made clothing. The Coast Artillery Board has not yet had time to study this report and render its report thereon.

PROJECT No. 953—RADIO CONTROLLED HIGH SPEED TARGET.—Instructions have been received from the Chief of Coast Artillery for the Coast Artillery Board to proceed with the development of such a target. The general plan is to develop a high speed motor boat held on a predetermined course by a gyroscope and controlled as to speed and direction by an operator utilizing radio from either an airplane or a station on shore. It is contemplated that the boat, featuring gyroscopic control, will be purchased from a commercial firm and the radio installation will be made by the Coast Artillery Board. It is hoped that this test can be completed before the end of the present fiscal year.

PROJECT No. 973—TESTS OF LACQUERS AND VARNISHES FOR USE AS RUST PREVENTIVES.—Several different kinds of lacquers have been received by the Coast Artillery Board and most of them have been applied to the bright parts of guns and carriages at Fort Monroe. While it is too soon to make definite report on any one of these, it appears that some of these substances will meet the requirements and, if adopted as standard, such rust preventives will cause a gun on which they are used to present a much better appearance than a gun treated with the present slushing oils and greases.

PROJECT No. 975—TEXT ON TRACER CONTROL.—The press of work on the Coast Artillery Board has prevented very much progress being made in the preparation of this text. The views on this subject, held by the officers who have had experience in antiaircraft machine gun firings, are so at variance that it has been found most difficult to decide on the draft of a text to be sent out to the service. This wide divergence of opinion in itself, indicates the necessity for some standard text on the subject and it is hoped that constructive efforts along these lines may be made at an early date.

PROJECT No. 986—AIR BRAKES ON THREE-INCH ANTIAIRCRAFT GUN MOUNTS M2 AND ON INSTRUMENT

TRAILERS M1.—All these vehicles are at Fort Monroe, plus the new antiaircraft gun T8 on Mount T₃ and the prime mover, all provided with air brake connections. Advantage was taken of the bad roads provided by the recent weather and the report of the test is now in preparation. It can be stated at this time that the prime mover with its load was maneuvered on an icy road surface in a way that probably would have been impossible with a towed load provided only with a hand brake.

PROJECT No. 987—LUMINOUS PAINTS FOR GUNS.—As previously stated, the problem, on the one hand, of providing sufficient light for a gun crew to work, and, on the other hand, of keeping the gun position concealed from the view of airplanes, is a serious one. It has been found that a light which provides very poor illumination around the guns may be quite visible to an observer in an airplane. It has been suggested that the breech of the gun be outlined in luminous paint and that other parts of the gun be more or less covered by such paint so that no lights around the emplacement will be necessary. It appears that the paints that hold out much promise of being useful are very expensive. Work has not advanced far enough as yet for the Board to be able to state just what form the test will take. Of course, the final test will involve night firing and it is not known now just when any such firing can be held.

PROJECT No. 988—LINN HALF TRACK TRUCK.—This vehicle is a powerful prime mover fitted, as far as the rear wheels are concerned, with traction devices somewhat similar to the Prime Mover T₉, reported upon in Project No. 984 in the January-February issue of the JOURNAL. The vehicle has been tested but the report has not been completed. However, it can be stated that the truck towed a 155-mm. gun over terrain so difficult that it could be negotiated before only by a ten-ton tractor. A decided advantage of the prime mover over the tractor is the freight carrying capabilities of the former. In fact, a certain amount of load, which might as well be "pay load," is necessary to afford good traction.

PROJECT No. 989—AZIMUTH AND ELEVATION CHECKING DEVICE FOR 155-MM. GUNS.—This is a device to be used in firing as an aid in the analysis of target practice. The device was submitted by the Commanding General, Hawaiian Separate Coast Artillery Brigade. A pilot model has been made up and the Board is awaiting an opportunity to test it in actual firing.

SECTION III Miscellaneous

The following subjects, not taken up as projects but upon which the Coast Artillery Board has acted since the last publication of the JOURNAL, have been selected from the files of the Coast Artillery Board because of their general interest:

CLASSIFICATION OF NATIONAL GUARD BATTERIES.—Coast Artillery memoranda issued each year set forth the relative standing and classification of batteries of the

Regular Service as to efficiency in target practice. The Coast Artillery Board has, under the direction of the Chief of Coast Artillery, just completed a study on classification of batteries of the National Guard. Corollary to this, is the selection of the battery of the National Guard which is to receive the Coast Artillery Association's award for proficiency in firing during the last calendar year.

WATER-PROOFING OF SEACOAST BATTERIES.—Certain batteries throughout the Coast Artillery service have undesirable reputations as being wet batteries. Battery DeRussy, at Fort Monroe, is one of these and the Coast Artillery Board has made more or less of a study of how to prevent moisture in the galleries, rooms and magazines of that battery. It is well known that the moisture in a battery may come from two sources; namely, from condensation and from seepage. As long ago as 1900 instructions were issued to prevent moisture collecting in batteries from condensation. The procedure outlined at that time is fully as effective today as it was then but such procedure contemplates almost constant attendance of personnel at emplacements, and it is known that it was quite effective in the good old days when every battery was manned; but today caretaking detachments could not be expected to make almost hourly readings on the wet and dry bulb thermometer and determine by reference to tables A and B whether the doors of the magazine should be opened or closed. It has been found that at Battery DeRussy most of the moisture comes from seepage through cracks in the concrete of the emplacement. It may take as much as two days after a rain has fallen for the water to seep through the concrete and into a room or gallery, and it is most difficult in many cases, to find where this water entered the outside surface of the emplacement. It is still more difficult to seal such an orifice when it is discovered. The Board, in the study submitted, concluded that liberal applications of tar to such surfaces, as would permit of such application, is about the only feasible remedy for preventing or reducing seepage. Of course, the newer emplacements throughout the service avoid both seepage and condensation by the use of double walls; that is, using the principle of a house within a house; and in some of the older batteries there have been installed metal ceilings to deflect dripping water.

VISITS OF OFFICERS.—During January Captains S. L. McCroskey and C. S. Harris, Coast Artillery Corps, visited the works of the Sperry Gyroscope Company in Brooklyn, and Frankford Arsenal, to familiarize themselves with the methods employed at these two plants and the details of Coast Artillery instruments under manufacture at these plants.

TRACER CONTROL.—Closely allied to Project No. 975, noted above, is the test to be taken up in the near future, of tracer control of antiaircraft machine gun fire. Request has been made by the Chief of Coast Artillery

upon the Chief of Ordnance for the manufacture of several different kinds of tracers to be tested by the Coast Artillery. The Coast Artillery Board has been directed to prepare an outline of tests for tracer ammunition to include:

a. Types and amounts of ammunition: i.e., one-color or two-color tracers, tracers that will be blind up to a certain range, and

b. Procedure and equipment to be used in tests.

This is one step in the development of machine-gun fire control, and the Coast Artillery Board believes that several more steps are to be taken before the effectiveness of machine guns becomes anywhere near being commensurate with their power as agents of destruction to aircraft.

(Continued on page 160)

COAST ARTILLERY ORDERS

Colonel H. L. Butler, from Washington University, St. Louis, to Inspector General's Department, Panama, sailing New York, May 4.

Colonel F. L. Dengler, report to President Army retiring board, Letterman General Hospital.

Lieutenant Colonel Earl Biscoe promoted Colonel January 1.

Lieutenant Colonel G. W. Cocheu, from 7th, Ft. Hancock, to member General Staff Corps, War Department General Staff, July 10.

Lieutenant Colonel Henry W. T. Eglin, from Hawaii, to office of the Assistant Secretary of War, Washington, D. C.

Lieutenant Colonel Sanderford Jarman to member of the General Staff Corps, War Department General Staff, July 1.

Lieutenant Colonel Walter Singles, retired, physical disability, February 28.

Lieutenant Colonel F. H. Smith, from 69th, Ft. McClellan to member of the General Staff Corps and assigned to General Staff with Troops, Panama, sailing New York, June 21.

Major A. D. Chipman, from 13th, Ft. Barrancas to Washington University, St. Louis.

Major Richard F. Cox, from member of General Staff Corps, War Department General Staff, Washington, D. C., to student, Naval War College, Newport, July 1.

Major John H. Lindt to member of the General Staff Corps, War Department General Staff, August 19.

Major J. L. Scott, from 69th, Ft. McClellan, to Finance Department, Baltimore, March 1.

Major W. R. Stewart, detailed parole officer, Pacific branch, U. S. Disciplinary Barracks, Alcatraz, January 15.

Captain C. R. Adams, from Panama to 11th, Ft. H. G. Wright.

Captain L. M. Applegate, CA-Res. to student Special Course, Command and General Staff School, Ft. Leavenworth, March 11.

Captain Delbert Ausmus, from the Philippines to Org. Res., Second Corps Area, Schenectady.

Captain T. R. Bartlett, from 63d, Ft. MacArthur, to the Philippines, sailing San Francisco, May 25, revoked.

Captain Walter H. Carlisle, from 13th, Ft. Crockett, to the Philippines, sailing New York, May 4.

Captain E. T. Conway, from Hawaii to Coast Artillery Board, Ft. Monroe.

Captain L. R. Crews, from the Philippines to Kansas State College of Agriculture and Applied Science, Manhattan.

Captain J. B. Hafer, from Ft. Slocum, to student, C. A. School, Ft. Monroe.

Captain C. D. Hindle, from 6th, Ft. Winfield Scott, to Hawaii, sailing San Francisco, May 26.

Captain E. A. Manthey, retired, physical disability, January 31.

Captain H. H. Newman, Jr., from Panama to 52d, Ft. Monroe.

Captain G. R. Owens, from Panama, to 14th, Ft. Worden.

Captain J. R. Townsend, from Hawaii, to 51st, Ft. Monroe.

Captain J. E. Troupe, from 11th, Ft. H. G. Wright, to Panama, sailing New York, June 21.

First Lieutenant R. W. Berry, from 51st, Ft. Monroe, to Hawaii, sailing New York, May 4.

First Lieutenant G. L. Chapman, CA-Res., promoted Captain, CA-Res., February 7.

First Lieutenant W. G. Devens, from Ordnance Department, Raritan Arsenal, Metuchen, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant L. K. Dewey, CA-Res., promoted Captain, CA-Res., January 4.

First Lieutenant E. C. Dunham, from 69th, Ft. McClellan, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant J. W. Dwyer, from Hawaii to 62d, Ft. Totten.

First Lieutenant B. D. Gill, from 62d, Ft. Totten, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant R. H. Grinder, from 7th, Ft. DuPont to 62d, Ft. Totten.

First Lieutenant N. T. Haakensen, from 52d, Ft. Hancock, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant J. S. Henn, from 69th, Ft. McClellan, to University of Alabama, University.

First Lieutenant H. L. Hughes, from 14th, Ft. Worden, to Quartermaster Corps, Philadelphia, March 1. Previous orders revoked.

First Lieutenant H. G. Johnson, CA-Res., promoted Captain, CA-Res., January 15.

First Lieutenant V. M. Kimm, from 14th, Ft. Worden, to Panama, sailing San Francisco, June 19.

First Lieutenant D. D. Lamson promoted Captain, January 1.

First Lieutenant A. J. Lepping, from 11th, Ft. H. G. Wright, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant M. J. McKinney, from 62d, Ft. Totten, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant N. A. McLamb, from

13th, Ft. Barrancas, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant Donald McLean, from Philippines, to 51st, Ft. Monroe.

First Lieutenant W. B. Merritt, from Panama, to 52d, Ft. Hancock.

First Lieutenant R. L. Miller, from 52d, Ft. Hancock, to student, C. A. School, Ft. Monroe, August 27.

First Lieutenant J. W. Mosteller, Jr., from 5th, Ft. Hamilton, to 62d, Ft. Totten.

First Lieutenant O. A. Nelson, from Hawaii, to 62d, Ft. Totten.

First Lieutenant F. N. Parsons, from University of Alabama, University, to 13th, Ft. Crockett.

First Lieutenant E. R. C. Ward, from 11th, Ft. H. G. Wright, to student, C. A. School, Ft. Monroe, August 27.

Second Lieutenant C. K. Allen, from 62d, Ft. Totten, to Ordnance Department, Watertown Arsenal, June 10.

Second Lieutenant J. G. Bain, from 61st, Ft. Sheridan, to student, C. A. School, Ft. Monroe, August 27.

Second Lieutenant O. B. Beasley, from the Philippines to U. S. Military Academy, West Point.

Second Lieutenant C. G. Calloway, from duty Philadelphia Quartermaster Depot, to student, Quartermaster Corps School, Philadelphia.

Second Lieutenant T. J. Dayharsh, from 52d, Ft. Hancock, to student, C. A. School, Ft. Monroe, August 27.

Second Lieutenant O. H. Gilbert, from 11th, Ft. H. G. Wright, to student, C. A. School, Ft. Monroe, August 27.

Second Lieutenant L. J. Hames, CA-Res., promoted First Lieutenant, CA-Res., January 4.

Second Lieutenant Harry Julian, from 2d, Ft. Monroe, to the Philippines, sailing New York, May 4.

Second Lieutenant H. R. McKenzie, from 61st, Ft. Sheridan to Quartermaster Corps, Philadelphia, August 20.

Second Lieutenant W. F. Spurgin, from 13th, Ft. Barrancas to Hawaii, sailing New York, March 9.

Second Lieutenant Merle R. Thompson, from 62d, Ft. Totten, to 2d, Ft. Monroe.

Second Lieutenant J. F. Thorlin, from Air Corps, Randolph Field, to 6th, Ft. Winfield Scott.

Second Lieutenant R. F. Tomlin, from 13th, Ft. Barrancas, to student, C. A. School, Ft. Monroe, August 27.

Second Lieutenant F. R. Young, from 51st, Ft. Monroe, to Ordnance Department, Watertown Arsenal, June 10.

THE FOREIGN MILITARY PRESS

Reviewed by Major Alexander L. P. Johnson, Infantry

CANADA — *Canadian Defence Quarterly* — October, 1933.

GERMANY UNDER THE NAZIS. By Major T. V. Scudamore, V.D., R.G.G.S., the British Columbia Regiment.

Observing that Hitler's fiery oratory is largely for home consumption, the author states that Germany is unlikely to force war in Europe to achieve her ends, as there is little really worth fighting for. Thus, the author notes, the small area of Slesvig-Holstein ceded to Denmark, and the districts of Eupen and Malmedy, ceded to Belgium, are of little value. The ultimate fate of the Saar Basin is to be decided by a plebiscite in 1935. The outcome, the author thinks, is not nearly as certain today as it seemed to be in the recent past, when an overwhelming German vote appeared a foregone conclusion. Alsace-Lorraine are permanently settled in favor of France, and Germany has no wish to reopen this question, notwithstanding the fact that the population is overwhelmingly German.

Although the Polish Corridor has been a fruitful cause of dispute for fifteen years, the author seems to attach great significance to the fact that the new German Government actually recognized the right of Poland to exist as a separate state, an admission no previous German Government has made. Upper Silesia, in the author's opinion, should belong to one state or the other in its entirety. But, he adds, if it were to go to Germany, it would upset the balance of power, whilst if it were to go to Poland, the Polish disregard of minority rights would unquestionably cause serious trouble with the German population of this province.

The author believes that the danger has switched to Austria, where Nazism is spreading rapidly and, unless French and Italian money can keep the present Government in power, the Nazis are bound to gain control, and that would bring forth the demand for a close economic and political alliance with Germany.

The principal change effected by the Nazi régime within Germany, the author observes, is the attitude of intolerance towards foreigners which resembles the growing suspicion and rudeness that prevailed in the years before the war. It is being fanned, he adds, by the same kind of propaganda. On the other hand, the author credits Hitler with having achieved the unification of Germany. He secured the support of the great industrialists and curbed the great landowners. He reduced unemployment, and is credited with other important achievements in the domestic field. "On the whole," the author states, "the

revolution in Germany has been carried through with the minimum of bloodshed, but possibly not with the minimum of injustice, but the great test is yet to come."

The future, the author writes, is uncertain. When Hindenburg passes from the scene, the power may pass to Hitler as President and Dictator, and the power of the new Chancellor may be materially reduced. There is a possibility of a Hohenzollern coming to the throne, either in the person of the eldest son of the Crown Prince, or a member of the Catholic branch of the Hohenzollern family. "Whatever the outcome," the author concludes, "democracy in Germany, as elsewhere, has failed."

MEXICO — *Revista del Ejercito y de la Marina* — September, 1933.

ORGANIZATION OF THE CHILEAN ARMY.

The Republic of Chile, with a national domain 752,000 square kilometres and a population in excess of four and a quarter millions, maintains an army of 1,430 officers and 20,950 men. It consists of fifteen regiments of infantry, three battalions of alpine infantry, five battalions of chasseurs, nine regiments of cavalry, five regiments of field artillery and three battalions of mountain artillery. Five battalions of heavy artillery and five batteries of A. A. artillery are projected but have not yet been organized.

The infantry regiments consist of four rifle companies and two machine gun companies. The alpine Battalion consists of two rifle and one M.G. companies. The chasseur battalions have two rifle and one signal companies. The cavalry regiment contains three troops of lancers and one M.G. troop. The field artillery regiments consist of four batteries, the mountain battalions of two batteries.

The army is organized into five divisions and one cavalry division. One regiment of engineers and five battalions of trains complete the military establishment.

The Air Service consists of one air regiment of two observation, two pursuit and two bombardment squadrons.

The Army is supplemented by the constabulary consisting of 852 officers and 15,981 men.

Military service is compulsory for both sexes between ages of nineteen and forty-five. Active service covers one year. Nine years are allotted to service in the first reserve, and the remainder in the second levy. Active training periods of varying lengths are exacted of each reservist. The Military School supplies the officer personnel for both the active and the reserve list. Reserve officers are not eligible for promotion above the grade of captain.

AUSTRIA—*Oesterreichische Wenzzeitung*—December 22, 1933.

RUSSIAN FORCES IN THE FAR EAST. By Gok.

According to reports, the Soviet forces in the Far East under General Blücher, whose headquarters are at Chabarovsk, consists of two main groups. The first of these, in Primorskaya Province, on the Pacific Coast, comprises the XIX Corps consisting of eight infantry regiments, four cavalry regiments, 184 field pieces, three armored trains, 40 tanks, fifteen auto M.G.'s, and chemical warfare troops. In addition to these, there are two regiments of foreign communists (1 Korean, 1 Chinese), a detachment at Blagovitchensk (1 infantry regiment, 1 cavalry regiment, artillery, frontier guards, state constabulary and 1 regiment Mounted Police).

The second group, in Transbaikalia Province, comprises the VXIII Corps consisting of nine infantry and seven cavalry regiments, one-half regiment of Mongol cavalry, 117 artillery pieces, 45 tanks, fifteen auto M.G.'s, one battalion chemical warfare troops, detachments of the frontier guards (V.O.X.R.) and the State Constabulary (G.P.U.).

The Soviet Air Force in the Far East consists of 250 airplanes including fifteen seaplanes, and eighteen Mongolian planes. Troops of Outer Mongolia may be considered as auxiliaries. These consist of about seven cavalry divisions, two infantry divisions, heavy and mounted artillery, and eighty light tanks. These troops were reorganized in 1929 and include a cadre of 2,000 Russian officers and specialists.

The author observes that the Soviet Government apparently is planning the establishment of military frontier districts to be populated by specially selected colonists who are to be granted special privileges, including the right to own property, in return for their perpetual availability for the defence of the frontiers.

The author quotes *Tchassovoi*, military periodical published by Russian emigres in Paris, to the effect, that Vladivostok and Chabarovsk have been fortified and provided with heavy artillery. Fifty submarines are said to have been shipped by rail for assembly at Vladivostok. Soviet authorities apparently regard the troops actually in the Far East adequate to meet any emergency, and they do not contemplate additional mobilization. They consider their air service and chemical warfare equipment superior to that of the Japanese, and believe that the latter will be seriously handicapped by insurgent elements behind their backs.

BELGIUM—*Bulletin Belge des Sciences Militaires*—January, 1934.

WITH THE 26TH U. S. DIVISION. By A. Du Boisrouvray.

An interesting review of an article published under this title in the September 15, 1933, number of the periodical

Revue des Deux-Mondes (pages 334-365) by one of the French army instructors attached to the Yankee Division early in 1918. The author tells of his experiences in that assignment which, he writes, required tact and diplomacy in addition to professional attainments. He observes that in his dealings with Americans he had to guard against two things: American sensitiveness and French politeness. It was imperative, he states, to avoid even the semblance of a desire to assume command over the American troops, and he found it preferable to wait until his American comrades asked his advice rather than to offer it unsolicited. On the other hand, suggestions couched in the most tactful form Americans would often pretend not to understand and accuse the French instructors of lacking in frankness. The author believes that most Americans completely misunderstood French politeness. "Their race," he writes, "their education, their inclination towards brusque and quick action makes of them, with some exceptions, strangers to fine words and demeanor. Many of them reciprocated 'French politeness' in form but transformed it into a defensive weapon; dissimulation."

The author completes his narrative with interesting character sketches of the leaders of the 26th Division, among them Colonel John Henry Parker, "the hundred per cent American, who rejoiced when his division went into battle for the first time under its own commanders." General Charles H. Cole, commander of the 52d Brigade, Colonel Edward L. Logan, Colonel Duncan K. Major and General Clarence Edwards. He remembers all of them in eulogistic praise.

The author quotes General Degoutte's citation of the 26th Division, published in an Order of the Day of the French Sixth Army after the first phase of the attack on July 18, 1918, and which concludes with General Degoutte's statement: "I could not have done better with my own troops."

M. Du Boisrouvray concludes his article with a narrative of the severe and costly engagements fought "by units of this glorious division" on October 16, in Bois de Haumont, and October 17-23 in Bois d'Bruppy, hill 360 and Belleau Wood.

CZECHOSLOVAKIA — *Vojenske Rozhledy* — July-August, 1933.

THE RUSSIAN CAVALRY ON THE FRONT OF THE RUSSIAN EIGHTH ARMY, AUGUST 6-23, 1914. By Captain Alexander Mizinov, G.S.

The author discusses an interesting incident in course of the operations of the Russian 12th Cavalry Division and the 2d Cossack Division under General Zhigolin along the Zorucz River, on the Austro-Russian frontier, during the early phases of the World War. These cavalry divisions covered the front of the Russian Eighth Army, which was deploying along the line: Proskurin—Jarmolince—Dunajevsce. As soon as General Zhigolin deter-

mined that Hungarian Honvéd Hussar Division was marching on Gorodok, a town directly behind the center of his cavalry screen, he decided to organize for defence. He concentrated his Cossack Division in front of Gorodok and sought to frustrate hostile reconnaissance activities.

The Hungarian 5th Honvéd Hussar Division, reinforced by the Austro-Hungarian 15th Cavalry Brigade and the 32d Jäger battalion, deployed along the west bank of the Zorucz River in the evening of August 15. It effected a river crossing at 5:00 p.m., on the following day and, after pushing back the three Cossack troops which had opposed them, threw a bridge across the stream for its trains and went into bivouac near Kozina. At the same time the 2d Cossack Division reported that the Austro-Hungarian 1st Cavalry Division, which had bivouacked on the night of August 15 near Skala, likewise effected a crossing of the frontier stream on the morning of the 16th, and was advancing on Kamieniec-Podolsk.

On August 17th the 5th Honvéd Hussar Division resumed its march on Gorodok, while the Russian Cavalry fell back towards Lysovody. The Russians made the first serious stand to oppose the enemy advance at Gorodok, where the 1st Volga Regiment and the Don Cossack brigade supported by fourteen pieces of field artillery occupied a defensive position of the Gorodok-Jarmolince road. The Austro-Hungarian commander, believing that he was being opposed by the Russian main forces, ordered an attack. His 19th and 23d cavalry brigades attacked Gorodok from the north, and the 15th cavalry brigade attacked from the south. Artillery supported the action by concentrations placed upon the Russian trenches. The attack on the north progressed very slowly. The 15th brigade, having the advantage of wooded terrain, succeeded in closing in upon the Russian trenches. A portion of the 7th Hussar Regiment charged in three lines. They came within 800 or 900 paces of the Russian trenches without difficulty. At that moment, however, the Russians opened a deadly rifle and machine gun fire which enfiladed the assault waves and threw the attacker into confusion. The attack of the 8th Hussars fared no better even though they managed to inflict severe losses upon the Russians. The defeated Hungarian cavalry division withdrew under cover of darkness. All went well until they approached the river crossing. The infantry battalion, which had been left behind to guard the crossing, it seems, already heard the news of the defeat and became panic stricken. In the darkness and the downpour of rain the infantrymen mistook the retreating cavalry for pursuing Cossacks and opened fire on them inflicting further casualties upon the defeated troops.

Although the fortunes of war favored him in the end, General Brussilov was not at all satisfied with the conduct of operations by General Zhigalin. He relieved his cavalry commander and appointed General Pavlov to take his place.

FRANCE—*La Revue D'Infanterie*—November, 1933.

THE PROBLEM OF INFANTRY OBSERVATION. By Commandant A. Mathieu.

Quoting *Combat Instructions for Small Units* issued in January, 1916, to the effect that "observation is one of the principal sources of military intelligence, it should, therefore, be organized on a permanent basis in all echelons. . . .," the author undertakes to examine this important phase of infantry activity with a view of arriving at a satisfactory solution of the problem.

The author believes that the infantry battalion should have two observation groups of one N.C.O., and two privates each. Moreover, each machine gun or heavy infantry weapon company should be equipped with long-range binoculars or scissors instruments of artillery type, but having tripods which permit their use in the prone position. Training of intelligence personnel should be placed in charge of the regimental intelligence officer. In this connection the author notes that the best intelligence reports are without value unless they are transmitted promptly to the proper commander. Hence he believes that the training of intelligence and communications personnel should go hand in hand. It likewise should emphasize liaison between the infantry and supporting arms.

Personnel should be trained to establish observation posts and in their proper functioning both under stabilized and mobile conditions of warfare. Men must be trained not only to be accurate in observation, but to be precise and exact in expression. Training of intelligence personnel, both individual and collective, should appeal to intelligence, develop technical knowledge and aptitudes, and physical qualities under the most variable conditions, day and night, in every type of terrain. The attainment of the highest degree of efficiency is imperative, the author concludes, because in the final analysis, superiority of observation is the basic condition of superiority of fire which, in turn, decides the result of modern battle.

GERMANY — *Militär Wochenblatt* — December 18, 1933.

ORGANIZATION OF THE JAPANESE ARMY. General Military Information.

According to "Krasnaya Svezda," official Soviet military periodical (No. 263), the Japanese are planning the modernization of the armament of their seventeen divisions with a view of increasing their fire power some 200-300 per cent. The project includes the organization of three or four new divisions, and eight tank regiments. It is believed that this program is now about one-third completed. Japan has approximately 2,000 airplanes. The number of light planes has been materially increased, but there still exists a considerable shortage in the heavier type of aircraft. The four-year naval program provides for 8,500-ton cruisers with five triple-gun turrets mount-

ing 15 cm. guns. They are to be capable of a speed of 33 knots. The plan includes the construction of two 10,000-ton airplane carriers, one mine planter (5,000 tons), fourteen destroyers, six submarines, eleven auxiliaries, and eight air squadrons. Appropriations for this project will total 670 million yen, of which 80 million yen have been appropriated for the current year.

GREAT BRITAIN—*Journal of the Royal Service Institution*—August, 1933.

THE INTERNATIONAL SITUATION. By Major E. W. Polson-Newman, B.A., F.R.G.S.

Among other topics of current interest in the field of international affairs, the author discusses the existing relations between China and Japan. The armistice of May 31, 1933, provided that the Chinese Army remain west and south of the line: Yen-ching-Tung-Chow-Lutai; the Japanese Army to have the right to inspect the Chinese withdrawal by airplane or other means; upon confirmation of the Chinese withdrawal, the Japanese to withdraw north of the Great Wall; formation of a Chinese police force to maintain order in the area north and east of the agreed line. Since the signing of the armistice no further military operations have taken place. Although the Chinese have complied with the terms of the armistice, some Manchukuo troops still appear to be south of the Great Wall. The Japanese, however, deny control of them.

The general situation in Manchuria and Jehol outwardly at least appears to be quiet. Minor operations without importance are in progress against brigands in Jehol. By assuming control of all railways in Manchuria, except the Russian-owned Chinese Eastern, the Japanese have greatly consolidated their position. They are aiming at adapting the railway system to military needs.

The Chinese-Eastern Railway question remains unsolved. The author states that the situation is most difficult. The Soviet Union complained that the Japanese have interfered with the operation of the line, imprisoned Soviet citizens, and have forcibly used the Soviet railways to transport troops. Change of ownership of this railroad, and the conversion of the Russian gauge to the Manchurian normal track, would separate Vladivostok from Siberia and render it untenable by the Russians in case of war.

Chinese feeling still runs high against the Japanese, and the boycott of Japanese goods continues. The Nanking government realizes, however, that its cause in Manchuria is lost. Only the desire "to save face," the author states, prevents an early understanding with Manchukuo and Japan. The Canton plan to fight the Japanese failed to materialize and it seems that the move was in reality intended more against the Nanking government than against Japan. Communists manifested renewed activity. The Red Army gained some successes last May, but the situation has not shown any signs of

growing worse. A more serious rebellion of Moslems in Sinkiang was finally liquidated by the setting up of a compromise administration of Chinese, Tungans and Turks, which apparently enjoys the confidence of the Moslem population.

Journal of the United Service Institution—November, 1933.

ITALY AND THE BALKAN STATES. By Commendatore L. Villani, M.C.

Referring to Italy's historic interest in the Balkans, the author outlines in brief summaries existing relations between Italy and the several Balkan states. Although the seizure by Italy of certain islands in the Eastern Mediterranean during the Italo-Turkish war of 1911-1912, and subsequent Italian aspirations in Asia Minor conflicted with the ambitions of Greece and was the fruitful cause of friction between the two nations, the failure of the Greeks in the Smyrna campaign served to eliminate the disturbing causes of rivalry, and the present relations between Italy and Greece, the author states, are those of cordial coöperation. Italians are playing an important part in the development of Greece.

Italian relations with Turkey were at first difficult, largely because of Turkish suspicion. Today better feelings prevail, and the political and commercial relations have grown more intimate. Italy has concluded treaties of friendship with both Greece and Turkey.

In Albania, the author states, "Italy's interests are almost purely negative," not unlike those of Great Britain in Portugal. The Italian-Albanian treaty of alliance, he adds, was deliberately drafted on the lines of the Anglo-Portuguese treaty. Italy is anxious that Albania should never fall into the hands or sphere of influence of any foreign power, and she has no wish to occupy any part of Albanian territory herself. The author defends the construction with Italian help of alleged "military roads" in Albania on the ground that these roads merely link up communities of the interior and connect the producing agricultural districts with the coast. Although capable of military uses, he states, these roads are a primary necessity of a very backward country. Italy has helped Albania in organizing her army which consists of one full division and one skeleton division. This army is primarily designed for the protection of the country against roving armed bands which abound in the Balkans.

Italy's relations with Yugoslavia are more difficult than with any other Balkan State. This is largely due to a clash of interests which owes its origin to certain territorial arrangements perpetrated by the Paris Peace Conference in favor of Yugoslavia and to the detriment of Italy or *vice versa*. The principal bone of contention at present seems to be the Yugoslav claim to all of "Venezia Giulia" awarded in its entirety to Italy, and the author charges the Belgrade Government with encouraging terroristic activities seeking to foment trouble between

the Italian and Slav populations of the disputed territory. Although the ratio of the Italian and Slav population of that province is germane to the issue, the author ignores such data completely, but denounces France and Czechoslovakia for encouraging Yugoslav annexationist designs by supplying that country with large quantities of war material. With the recent improvement in Franco-Italian relations, the author believes, the stream of war material pouring into Yugoslavia will tend to dry up, and without French help or encouragement Yugoslavia will cease to be a menace to Italy.

Although Italians engaged in some hard fighting with Bulgarian troops during the World War, relations today between Italy and Bulgaria are most cordial. This is to some extent due to the marriage of King Boris and an Italian Princess. Italo-Bulgarian trade is active, and on the whole very satisfactory to Italian commercial interests.

Italo-Rumanian relations are somewhat affected by Italy's friendship with Hungary. The author states, however, that it is not Italy's policy to play one of these countries against the other, but rather "to play the part of the honest broker." While Italy regards certain provisions of the Peace Treaties as unsatisfactory, and believes that their perpetuation will tend to keep Europe in a state of dangerous unrest, a revisionist policy, if insisted upon at once, may prove equally dangerous to peace. He believes that the Four-Power Pact sponsored by Mussolini furnishes a safe middle-course and serves as a reminder that Article 19 of the League of Nations Covenant provides for treaty revision when favorable circumstances arise.

The author concludes by pointing to the fact that the most deplorable effect of the Paris Peace settlement was the Balkanization of Central Europe. This condition existed 250 years ago when Turkish rule extended almost to the gates of Vienna. It was driven back southeastward with the expulsion of the Turks from Central Europe, but advanced once more as an aftermath of the World War. The author expresses the hope that civilized countries will agree "that the movement be now stopped, and if possible driven yet further back."

HUNGARY — *Magyar Katonai Szemle* — November, 1933.

PRINCIPLES OF MODERN MILITARY TRAINING FOR SHORT-TERM SERVICE. By Captain Francis Horváth.

The World War demonstrated that long protracted conflicts are as detrimental to the victor as to the vanquished. Hence, the author concludes, it may be assumed that nations in the future will seek to bring wars to as rapid a conclusion as possible. This, he thinks, can best be accomplished by striking before the enemy is fully prepared for action. Wars of the future, therefore, are likely to begin with startling suddenness—without any preliminary warning whatever. Such course naturally presupposes the maintenance even in time of peace of a

military force sufficiently strong and well-trained for such a purpose. With this objective in view, the careful planning of military training assumes particular importance in view of the prevailing systems of short terms of active service.

The author divides the training of the soldier into three phases: (1) preliminary, in civil life; (2) military, during the period of active service; and (3) supplementary, both in civil life and periods of active service with the colors.

The preliminary phase is charged with character building, physical development and discipline. This should be completed before the eighteenth year of age. Between eighteen and twenty-one the individual receives instruction in the school of the soldier, elementary drill and marksmanship. During the second phase, in active service, the individual is being developed into an efficient soldier, while the objective of the third phase is to keep the reservist abreast with military developments and changes, to keep up his interest in military matters, and to qualify him for functions of leadership in a higher grade.

The author believes that the period of active service should be devoted to a thorough training of specialists. As far as possible each individual should be assigned to an arm or weapon of his own choice or special aptitude. Six months should suffice to make of him an expert in the service of that weapon. These six months the author would divide into three periods: two months for individual instruction, three months for training in small units and one month for training in the larger units. Promotion to N.C.O. grades would require additional service and training for especially selected candidates having the necessary aptitude for leadership.

Only young men of adequate education, the author thinks, should be admitted as candidates for reserve commissions after having served with the colors one full year. He emphasizes the importance of uniformity of training and indoctrination. This, the author states, is particularly important in officers. Homogeneity in the corps of officers will most likely result if the officer personnel is composed of graduates of the same institution. Company officers should be experts in the technique of the principal weapons of their own arm, and they should possess some knowledge of the essential characteristics of the other combat arms. Before promotion to field grade, officers should be afforded an opportunity to become thoroughly familiar with other arms, their tactics and technique. He advocates in all training the practical, applicatory method of instruction, and favors the use of talking films.

Pesti Naplo—September 29, 1933.

The usually well-informed Budapest daily, *Pesti Naplo*, publishes an interesting account by a special correspondent concerning a recent lease by Japan of several millions of acres of cotton land in Abyssinia. Japanese settlers are to make their first appearance on the African conti-

ment in the near future. The Japanese leasehold is in close proximity of the Italian colony of Eritrea. According to the correspondent, American interests sought to obtain a lease on the same tract of land, but lost out to the Japanese. He states that Japan no longer conceals her determination to pursue a policy of frank aggression. Of course the promotion of the Japanese plan requires a good deal of money, and this they seek to obtain by means of systematic dumping of their cheap products upon the markets of the world. The ambitious plan of economic and military imperialism, the writer observes, has evoked grave concern among all nations, but more especially among the workers of the Anglo-Saxon world, who with good reason see their high standard of living menaced by Japanese coolie labor capable of subsisting on a bowl of rice.

ITALY—*Rivista di Fanteria*—January, 1934.

The new year saw the advent of a new military magazine devoted to the interests of the infantry, the *Rivista di Fanteria*, successor to another similar periodical which has been dormant since 1904. In reality, however, this "new" Infantry review is the well-known *Rivista Militare Italiana* under a new name assumed by direction of Il Duce, head of the Royal Italian Government and Minister of War. The reason for this change of designation is made apparent by Mussolini's dedicatory message. "Whoever speaks of Infantry," writes Il Duce, "speaks of the 'people' in the broadest and profoundest sense of the word. Whoever speaks of 'the Infantry,' speaks of the heroism of the people from the dawn of history to the present day. Whoever speaks of 'the Infantry,' speaks of the decisive element of the battle and of war: today as yesterday, tomorrow as today and forever . . . The Fascist Government has recognized this historic and moral precedence of the Infantry, and for the past decade has conferred upon it the honor of guarding the Unknown Soldier; it is recruiting to its ranks the flower of the levies; it is providing that arm with all the effective instruments of war." It is meet and proper, that this glorious, basic arm be provided also with a medium of information of its own in order that it may be the better prepared to perform its difficult tasks in any future emergency.

The first number of the *Rivista di Fanteria*, published in Rome under the auspices of the General Staff and the Ministry of War, is wholly dedicatory. First of all, there is a replica of the Royal Patent of the Order of Military Merit of the House of Savoy, conferred upon the Infantry arm for valiant services rendered in the World War. It is followed by the citation of the Infantry for this signal honor by the Duke of Aosta and Italy's generalissimo during the World War, General Armando Diaz. Letters of homage by the Marshals of Italy, the generals of the armies and army corps and other dignitaries of the Italian Army fill the remainder of 108 pages.

May we join this chorus of eulogy and praise, and with hands stretched across the seas felicitate our comrades in

arms, the Doughboys of Sunny Italy, upon the advent of the *Rivista di Fanteria* which, we are sure, will live up to the best traditions not only of the worthy periodical whose place it now takes, but equally to the highest ideals of the "Queen of the battle" of all ages: the *Infantry*.

JUGOSLAVIA—*Pesadisko-Artilleriski Glasnik*—July-August-September, 1933.

TRAINING PLANS AND SCHEDULES. By Lieutenant Colonel Ivan L. Matagic.

The author bases his program of instruction upon the theory that the thorough training of the individual is by far the most important phase of military training. He devotes 56 per cent of the available training period to the instruction of the individual as against 24 per cent to the squad, and 20 per cent to the platoon. He lays great stress upon the marksmanship training as part of the individual instruction, and his program allots 112 hours to this subject. Bayonet training receives twenty-six hours, gas defence only seven hours. Combat training and tactics receive a total of 211 hours during the training period January 1-July 31.

The author believes that battalion commanders are responsible for the collective training of the units under their command. They should, therefore, prepare the program of training for that phase of instruction, and they should provide for the training of specialists, such as automatic riflemen, intelligence and communication personnel, and of N.C.O. replacements. The author presents a complete training schedule to include the platoon.

SWITZERLAND—*Allgemeine Schweizerische Militärzeitung*—July, 1933.

THE BAYONET IN THE WORLD WAR AND AT SHANGHAI. By Colonel von Loebell.

The author endeavors to answer the question frequently asked, whether or not the bayonet has become an obsolete weapon. Citing examples of its use in the World War, the author states that these experiences warrant the conclusion that the war of the future, like those of the past, will inevitably abound in incidents of hand-to-hand fighting, and although he recognizes the fact that hand grenades have materially limited the use of the cold steel, the bayonet is by no means obsolete, and that it will continue to play an important part at the decisive moment of the battles of the future. The recent fighting at Shanghai, the author states, fully bears out this view even though we make allowances for the peculiarities of the situation. Hand-to-hand combat occurred frequently at Shanghai, and the combatants used the bayonet as freely as rifle butts and hand grenades. The author observes that in these encounters the Chinese proved superior to the Japanese, notably the Japanese marines, who failed rather miserably. Chinese longswordsmen were particularly effective in their death-defying assaults.

NATIONAL GUARD NOTES

248th Coast Artillery Battalion Improves Armory Drill

By Captain M. E. Conable

IN order to more nearly simulate battle conditions and to get away from the time-worn method of tracking a single miniature ship back and forth across the armory drill floor, the 248th Coast Artillery has developed the following method for drill purposes:

Silhouettes of various types of ships were extracted from *Jane's Fighting Ships* and cut to scale from plywood. A "truck" was made that is designed to carry four ships at a time (a division) in column, line, or line of bearing. The "truck" is mounted on casters, making it suitable for towing in any direction.

A small motor (obtainable from a discarded washing machine or other electrical appliance) is used. The necessary gearing is provided to permit towing of the targets at the required speed. The towing unit is separate and complete, and may be placed at any desired location on the drill floor.

The result is that the observers do not know ahead of time what type of ship will be used, the plotter does not have advance information as to the direction or speed of the target, while the battery commander may assign any of the four ships in the formation or may change from one to another as desired.

Modifications now under consideration are (a) a piece of plywood, or other substance, cut in an irregular shape to be mounted on edge so as to represent an island or smoke screen behind which the towed target can disappear for a short time; and (b) the use of flashlights, with the armory darkened, to represent searchlights.

The whole idea is to permit or require the use of various commands necessary to assign different types of ships in different formations, to change target, to involve the use of searchlights, and to avoid the usual rut that

results from the same drill night after night. The device maintains the interest of all personnel, trains the plotter to furnish the required data even though observation stations may report the target obscured for short periods of time, trains the observers and gun pointers in the distinguishing features of various types of ships and familiarizes them with the commands involved in the varying situations.

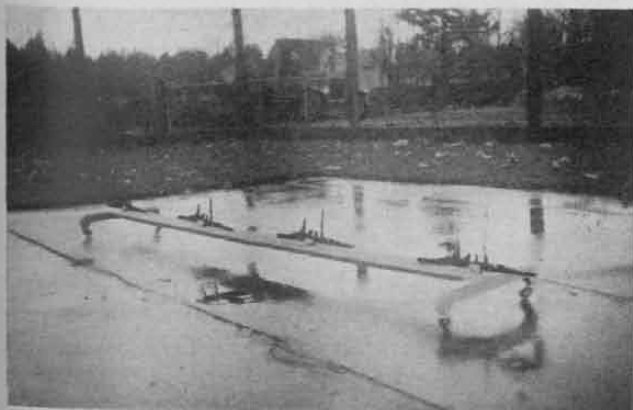
What is Going On in the 240th C.A. Me. N.G.

WE are indebted to the Instructor, Lieut. Col. James Dusenbury for the following:

The antiaircraft battalion of the 240th Coast Artillery consists of three batteries, with three officers each, under the command of Major Henry A. Peabody. The following training memorandum shows that they are all workers. Instead of talking about depressions and pay cuts they talk about their work and are busy in preparing for the day when we shall again be called upon to save the nation. In forwarding the training memorandum Col. Dusenbury says: "I am sending this with the hope that it may receive some publicity in our JOURNAL and give an idea to other organizations to do likewise."

TRAINING MEMORANDUM No. 2.

1. A list of lectures on military subjects together with lists of officers to deliver the same is hereby annexed.
2. These lectures are made available to the various batteries of the 3rd Bn. for use on "Old Timers" nights or similar occasions when talks on military subjects would be appropriate.
3. The plan is entirely voluntary and can be made use of or not as the various batteries see fit.
4. The engagement of the lecturer should be made by letter from the battery commander to the officer whose lecture is desired and the latter if a subordinate to a battery commander should obtain his commander's permission to be absent from drill if drill nights conflict.
5. At least two weeks' notice should be given to the lecturer to avoid complications.
6. It is suggested that the battery desiring the lecturer should contribute four cents a mile to reimburse him for travel expenses.
7. Lecturers should avoid making use of information marked "CONFIDENTIAL" on occasions when non-military persons may be present.
8. The idea behind the plan is to exchange views on military matters, to learn what the other batteries are doing and create a battalion *esprit de corps*. When you help the other batteries you help the Regiment.



Painted Ships on a Painted Ocean

Organizations of the National Guard Rated Excellent During the Past Training Year

UNDER date of March 9, Major General George E. Leach, Chief of the National Guard Bureau, sent the following letter to the Adjutant General of the Army:

"The National Guard Bureau desires to inform you that under the provisions of paragraph 71, National Guard Regulations No. 45, as amended by Changes No. 4, the National Guard Coast Artillery batteries listed below have been classified as *Excellent* by the War Department for the year 1933:

Btry. C	197th C.A. (AA)	N. H. N.G.
Btrys. C, D, E, F, G	198th C.A. (AA)	Del. N.G.
Btrys. D, E, G, H	202d C.A. (AA)	Ill. N.G.
Btrys. B, F, H	211th C.A. (AA)	Mass. N.G.
Btrys. B and C	213th C.A. (AA)	Penn. N.G.
Btrys. B, C, D, G	240th C.A. (HD)	Me. N.G.
Btrys. C, H, L	241st C.A. (HD)	Mass. N.G.
Btrys. A, C, E, G, H, I	243d C.A. (HD)	R. I. N.G.
Btrys. A, F, I	245th C.A. (HD)	N. Y. N.G.
Btrys. A, K	248th C.A. (HD)	Wash. N.G.
Btrys. A, C, D, E	249th C.A. (HD)	Ore. N.G.
Btrys. A, F	251st C.A. (AA)	Cal. N.G.
Btrys. C, D	252d C.A. (TD)	N.C. N.G.
Btry. A	260th C.A. (AA)	D. C. N.G.
Btry. B	264th C.A. (HD)	Ga. N.G.
Btrys. B and D	265th C.A. (HD)	Fla. N.G.

The following comments by the Chief of Coast Artillery concerning these practices are quoted for your information:

"An examination of the records indicates that the target practices fired by the organizations listed in the basic letter were of a very high order. This is confirmed by my personal observations in the case of some of these practices which I witnessed."

The Chief of the National Guard Bureau is highly gratified by the fine target practices held by the organizations listed, and desires to add his commendation to that of the Chief of Coast Artillery.

GEORGE E. LEACH, *Major General*,
Chief, National Guard Bureau.

1 1 1

Source Materials for the History Of the National Guard

IN order to procure a list of source materials from which a history of the National Guard as a whole, in the various states and territories, or of units thereof may be compiled, the National Guard Bureau has decided to coöperate with other agencies in order to take advantage of the Civil Works Act.

To this end a National Commission has been formed and provisions have been made so that this task may be accomplished in connection with a national survey of local archives and with a minimum of expense and effort on the part of the State Adjutants General.

The National Guard Bureau has requested State Adjutants General to designate a suitable person to make such arrangements as will insure that the interest of the military and naval history of your state shall not be neglected in this undertaking, and that the National Guard of your state shall not be overlooked when a history of the National Guard of the United States is written.

The Bureau has urged that, in addition to the survey of local archives already contemplated, the following be included in State C.W.A. projects:

A separate list of source materials relating to state military forces, whether contained in archives, libraries, historical societies or other collections.

A list of printed source materials, or secondary histories with information relating to the National Guard or other state militias.

While the materials for the history of the state military forces are being listed, it is believed that the opportunity for cataloguing all source materials relating to the military and naval history of the state (whether of Regular Army activities, volunteer troops, or other organizations) should not be neglected. Therefore it is suggested that in each state three separate lists be drawn up as follows:

Documentary sources for a complete military history of the state.

Sources for a history of the Militia or National Guard of the state including a list of *printed* sources, and secondary works.

Such source materials for naval history as may be disclosed during the progress of the inventory.

The National Guard Bureau is anxious that the list be made as complete as may be possible under the circumstances. It realizes that the states will wish to take advantage of this opportunity to make a wider list embracing state volunteer and other military and naval activities.

As the form in which the present Civil Works Act has been passed by the Congress makes no provision for federal supervision, it will be necessary, in order that the work described above may be brought to a successful conclusion, that the Adjutant General of each state, territory and the District of Columbia use his personal influence and the influence of his office:

To insure that C.W.A. funds are allocated to his state, territory or district, to further this survey as a whole.

To insure that the project include adequate provisions for a list of military and naval sources.

As the Civil Works Act is an emergency measure and will be put into effect immediately and last for a short time only it is urged that Adjutants General act immediately and coöperate continuously to secure the benefits of the Civil Works Act and the coöperation of the scholars in each state interested in this survey.

If carried out as contemplated the result should be a complete survey, not only of source materials for the history of the National Guard, but of the sources for the military history of each state and territory.

RESERVE NOTES

Reserve Officers

By LIEUTENANT COLONEL J. W. SUTPHEN
Infantry, Reserve
Executive Officer, 182d Brigade, 91st Division

THERE can be no doubt that in case of a general mobilization for a major emergency, Reserve officers will be called upon to fill positions on regimental, brigade and division staffs to even a greater extent than occurred during the World War.

During 1918, in practically all National Army divisions, the regimental staff rarely had more than one Regular Army officer, he being the Colonel in command. In the brigade, although the staff organization was rather loosely constructed, there was seldom over one Regular Army officer besides the brigade commander. With the division, aside from the commanding general, there was usually the chief of staff, the four G's, and the division quartermaster who hailed from the Regular Army, the balance of the staff being composed of Emergency officers. There is every reason to believe that in another emergency more Reserve officers rather than less will be called upon to fill such staff positions.

Since the war, tables of organization have been greatly changed. Staffs of regiment, brigade and division have been enlarged and augmented by officer specialists, and through subdivisions in staff organization the officer personnel necessary to proper functioning has been tremendously increased. Obviously, officers to fill these newly created positions must be drawn from the Reserve Corps. There is no other reservoir from which they can be drawn.

This article confines itself to a discussion of the peacetime assignment and training of Reserve officers for staff duty, primarily with the regiment, brigade and division.

Official comments upon the functioning of the lower staffs during the World War agree that inefficiency, confusion and lack of team play was the rule rather than the exception, until after the personnel of these staffs had had actual battle experience. In other words, training in staff duties was obtained in the school of battle—a most costly educational institution. It was largely to avoid a repetition of this experience that, in the Reserve division now organized on paper, provision has been made for definite assignment of Reserve officers to the various positions on the staffs within the division.

Theoretically, these Reserve divisions, when mobilized, will be fully staffed by Reserve officers, trained to their jobs and ready to function efficiently with a minimum of refresher study. Does the present system of assignment and training warrant any such assumption?

Their assignment and training for staff duty.

The idea seems to be prevalent in Army circles, including the Reserves, that these staffs will never be called upon to function as at present organized; that in case of an emergency even divisions as at present allocated will be broken up, and that therefore staff assignment and training need not be taken too seriously.

Only this attitude of mind can explain many of the assignments made to staff positions. Certainly, in many instances, the qualifications of the officer assigned could not have been considered, or even inquired into. In picking Reserve officers for staff positions, particularly with the brigade and division, there are certain basic qualifications which should be present before such an assignment is considered.

It was demonstrated during the war that those emergency officers assigned to staff positions, who had not had actual experience with troops prior to such assignment, miserably failed in efficiency in the majority of cases. Hence, if possible, no officer should be assigned to staff work unless he has obtained the viewpoint of the company or battalion commander through having functioned in that capacity.

Actual combat upsets the best laid plans. New plans must be made on the spur of the moment to meet rapidly changing conditions. A staff officer with actual battle experience, who can visualize what is happening from the terse reports he receives, is invaluable. Hence, whenever possible, officers with such experience should be selected for staff work.

No staff can function properly unless the keenest type of team play is developed. Hence, no officer should be assigned to staff duty unless he is temperamentally capable of full coöperation with other members of the staff, and with the commanders of units making up the command.

Many Reserve officers combine the three essentials mentioned above, but few seem to have found their way to staff assignment. The reason is obvious. Such officers are in great demand by regimental commanders and many are now holding assignments to positions which others could be trained to fill, while the staff for which they are particularly qualified endeavors to train officers who have not their outstanding abilities.

Therefore, to improve the present quality of staff officers, the first requisite is that only those officers who are

peculiarly fitted for the work receive staff assignments. The staff should be given at least an even break in the assignment of manifestly qualified officers.

But it is to the matter of training, even more than to assignment, that particular attention should be given.

Officers of the Regular Army are trained so that they can fill almost any position with varying degrees of efficiency. Aside from their training with troops, they attend various schools, including staff schools. Obviously, such complete training is impossible in the case of the Reserve officer. The best that can be expected of him is that he can be trained to handle one particular job. The Reserve officer can never be expected to become a thoroughly well rounded officer. He can be trained to efficiently handle a platoon, company or battalion, to command a truck train or a motor repair outfit; but he cannot be expected to be an efficient company commander and also able instantly to assume the duties of a Brigade S-3. The best Reserve officers are successful business men. The time they can devote to military matters is limited. This time should be devoted to training them to the job for which they are best qualified. This particularly applies to those officers assigned to staff duties.

Bearing this in mind, the ideal training of Reserve staff officers can be divided into four parts

- (1) Purely theoretical training in the duties of the particular staff sections to which they were assigned, and the coördination of this section with the staff as a whole, and with the corresponding section of the staffs of higher and lower commands.
- (2) Training in the functioning of the staff from M Day to M plus 120.
- (3) Tactical training through the media of map problems, conferences, etc., bringing into play the coördination of the various staff sections.
- (4) Field training, during which theoretical training is practically applied—the coördination of the various staff sections with similar sections of the staffs of higher and lower commands is stressed—and training with the staffs of the other arms is emphasized.

The first three parts would comprise inactive duty training, the fourth, active duty at summer camp.

The same tendency on the part of higher authority that fails to seriously consider the question of assignments to staff positions has resulted in a lamentable lack of tangible objective in the courses of training offered Reserve staff officers. Unit commanders and unit instructors have evolved various courses of inactive duty training, most of which leave much to be desired.

Naturally, the number of officers assigned to regimental, brigade and division staffs is small. The regimental commanders prefer to either look after the training of their staffs themselves, or else these staff officers are assigned to conduct troop schools. In the one case, staff officer receives only such training as the regimental commander deems necessary, and in the other, no staff training whatever. In no event does he receive any training in which coördination with staffs of higher and lower units is stressed.

Hence, attendance at staff schools, after eliminating those officers attached to regimental staffs, is reduced to officers of the brigade staffs of the various arms and to such officers as may hold division staff assignments, together with a heterogeneous collection of other officers of every branch of the service who have no troop schools and are anxious to accumulate credit hours.

That serious work can be done in such classes is out of the question. Tactical training in the handling of a brigade during an attack does not help a Lieutenant Colonel of the Dental Corps whose assignment is administrative, or the commander of a military police battalion, when the employment of such a battalion in the problem would be ridiculous. The very composition of such a class hinders rather than helps those staff officers who are anxious to learn more of the duties to which they may be called. All training in cohesion is lost, and the work of the class degenerates into the solving of simple problems in minor tactics with the instructor wracking his brains to insert into the problem some situation that will call for a solution by officers of branches of the service that obviously have no useful function to perform in so far as the problem is concerned.

To properly conduct inactive duty training of staff officers, classes should be formed which should be attended by the executive officer of regiments and the officers assigned to the four staff sections of the Regiment, the executive officer of brigades and the officers assigned to the brigade staff sections, and such division staff officers as are in the locality.

A course of study can then be prepared along intelligent lines and the need of coöperation between sections and between staffs actually demonstrated. Instruction can be made progressive, all leading up to the independent functioning of the staffs during the active duty training period.

To accomplish this end it will first be necessary to impress upon regimental commanders the necessity for training their regimental staffs in the regularly organized staff schools and not in the regimental schools. Second, manifestly unqualified officers must be removed from staffs and given other assignments and their places filled. Third, and most important, the courses of study should be the same as those required for the Staff and Command Course at Leavenworth. It follows that the utterly senseless regulation now in effect, that only Reserve officers of field grade can take such courses, should be abrogated. (It would be interesting in this connection to check with the Leavenworth School and ascertain what percentage of Regular Army officers below field grade attend the school.) Further, Reserve officers satisfactorily completing these courses should be listed as qualified to hold staff assignments, regardless of the grade held at time of completion.

In this manner, it will be possible to give the maximum of inactive duty training to those Reserve officers who hold staff assignments. Whether or not it is a fact that

these staffs as at present constituted will never function, the training of a large number of officers qualified for staff assignment will have been accomplished. That there will be a need for officers so trained goes without question.

In the Ninth Corps Area, arrangements for staff training during the active duty period were inaugurated in 1929 and were followed by similar training in 1930. Although officers attending received much that was beneficial in the matter of coordinated training, even more can be accomplished in the future, with the experience gained as a background. The Regular Army personnel did wonders with the facilities at their disposal and the limited time allowed for preparation.

However, the inactive duty training and the active duty tour were not coordinated. With early announcement as to the nature of the active duty training, the classes conducted during the inactive season could have been more efficiently instructed. Further, it is extremely difficult to conduct a problem calling for the functioning of several staffs, without troops. Time elements are overlooked and those officers without battle experience obtain faulty impressions, sometimes hard to eradicate.

As a solution to the problem of proper training of staffs during the active duty period, the following is suggested:

In almost every corps area, joint maneuvers of the Regular Army with some Reserve or National Guard units are conducted. These maneuvers cover a period of approximately two weeks. Problems are carefully worked out so that both staff and line officers receive the maximum of training. It is therefore suggested that Reserve brigade and division staffs be included in the conduct of these problems. Such an arrangement would give to the Reserve staff officer the opportunity of working with officers of the Regular establishment, bring him in closer contact with troops and above all give him training with branches of the service other than his own, which training is now entirely absent from any curricula and which must be obtained before any officer can consider himself properly qualified to perform his staff duties in time of war.

1 1 1

Why Do They Do It?

WHY do they do it? I don't know. But they do. Thousands of them. Year after year. Increasing thousands, tens of thousands. More than twice as many as can be accommodated want to do it. And more power to them. They're good kids, pardon me, fine young men, all of them. The CMTC's, of course.

The CMTC Battalion at Fort Monroe was formed on the historic parade ground for evening parade. The adjutant was on his way from the right of the line to his post in front of the battalion when there was a stir in the rear platoon of A Battery. A candidate was carried off the field. The sun had called three strikes.

Lieutenant White, naturally that isn't his name at all, turned to me and whispered, "Why do they do it? Come down here and work harder than they ever do at home, under tougher conditions, and come back next year for more. You were one of them yourself. Why do they do it?"

I was stumped. I didn't know. I still don't know. I have ideas, but they don't seem to be reasonable excuses for 53,000 youths applying for CMTC camps by April 1st of this year.

I came to my first CMTC camp as a bewildered, homesick kid of seventeen, weight 114 pounds. I came because—well, I don't know. I liked to play soldier when I was younger, I had the normal amount of patriotism, the idea of traveling intrigued me, the romance associated with the military had its weight, big brother had fought in the Engineers in the Big Fuss, and I wanted to learn to shoot a rifle. I think the last reason was the important one. I wanted to shoot a rifle. Well, regardless, one hot July morning in 1926 I found myself sitting with 150 other unfortunates in a cinder company street, clad in breeches, campaign hat, socks and shoes. That was all the clothing that had been issued at the moment. And everybody sat in the sharp, hot cinders until that kind old gentleman called the first sergeant assigned us to tents. Good old Camp Meade!

A bunch of very rough, uncouth fellows who had lost all their patience after years of trying to keep obstinate tanks in operation took us in tow, in addition to their other troubles. Those men of iron from the Tank Corps gave us ill-fitting uniforms, leaking tents, very satisfactory food, unbelievable amounts of merryhell, and all the I.D.R. there was. For thirty days we dragged our weary carcasses through ankle-deep sand at the whim of our officers. At the end of that time, an uninformed, impartial observer might have mistaken us for soldiers.

In those thirty days many things happened to me. I was insulted, cursed, praised, pampered, worked, and allowed to goldbrick with what seemed to be a lack of reason or system. I scrubbed pots, policed tents, took photos of Arlington Cemetery, ate army beans, sat through hygiene lectures, and learned the rudiments of poker.

When the paymaster handed me my twenty-odd dollars, I was never coming back. Never. There was no reason on earth why I should submerge myself in that potpourri of "Americans" from West Philly, Baltimore, Shamokin, and Winchester. I would be a fool of the worst kind to get myself into a position where plainly insane first sergeants could frighten me half to death. Only saps would sign up to wake at five-fifteen and not get a chance to eat between meals. Firing rifles was all it was cracked up to be, but how about cleaning them? It was glorious to be able to visit Washington, the dream of every kid, but not in a uniform that was made partly for big brother and partly for baby nephew. Come back? Not me. Besides, I'd be getting my commission through the ROTC.

But I came back. The very next year, number three rear rank, second squad, third platoon, Battery A CMTC, Fort Monroe, bore a striking resemblance to the author of these incoherent passages. I came knowing the soul torture in scrubbing pots, knowing how sore a rifle can make an unaccustomed shoulder, knowing that some bully was going to make things tough for me because I was a shrimp, knowing that many times I would want to cry "quits" but wouldn't because of what the other fellows would think. I came. Why? I dunno.

That year we had Regular Army Coast Artillery officers. They ragged us and harried us, and took us on an overnight hike when their spies at Grandview assured them that it would never get hotter or the mosquitoes more numerous. I knew what it would be like, and I wasn't working for a commission through the CMTC, but I came back. And thousands like me, all over the country, did likewise.

This year I returned as that strange, odoriferous, abused, misunderstood creature, a second lieutenant of Coast Artillery Reserves. It was to the same CMTC camp I had attended as a student several years before.

The boys in ranks might have been the same ones who stood shoulder to shoulder with me when I was a candidate. I'm positive that one youth was wearing the same hat I wore in '27. At least, it had the same sort of a hole gouged in the crown. It was the same cross-section of young America, with a sprinkling of oldsters. There were kids who made me wonder how they ever got through basic training, and there were men who had given up a month's pay at a lucrative job to come to camp. There were college juniors and postgraduates in the school of hard knocks.

After White's disturbing question, I began to make discreet inquiries among the CMTC's themselves. They didn't know, so they said. Some were very definitely working for a commission, some were bare-facedly down for a thirty-day free vacation, some were there to get away from nagging parents, some were there because they had heard that the girls in Hampton were worth coming for. (They are.) All admitted that those reasons sounded good, but they weren't really the reasons. There was something else. They couldn't lay a finger on it, but there was something else.

Blue Candidate Baseline was standing with me in the B. C. station at Battery Youguess, tending the phones while the rest of the battery was across the railroad tracks having a smoke.

Baseline turned to me and said, "Lieutenant, do you know what I like about these camps more than anything else?"

"No," I answered, interested. He was playing right into my alley. "What is it?"

"It's the feeling of being one of a team. It's knowing that when the captain yells 'Present Arms!' that everybody is going to do the same thing at the same time. It's saluting an officer and knowing he has to return it whether he likes it or not. He has to because it's the rules of the game. May I go and have a smoke, sir?"

Red Candidate Breechblock sauntered out of B Battery's kitchen and headed for a latrine, where he intended to scrape off some of the grease that he had collected during a day's K.P. As he saw me come around the corner of Headquarters he saluted smartly and asked if he might take a picture of me.

"Why?" I asked. Not only was I flattered and amused, but I doubted the military propriety of the proceedings. Was it against the customs of the service? I hope not, because Breechblock's request was granted.

"Well, sir," he answered, "I came to these camps hoping to get a commission. My boss doubts my ability to make the grade and wants me to stop. If I show him your picture and tell him you have yours—"

Maybe he'll never get "Superior" in tact, but I hope he gets his commission. I'm all for him, and every other young man who comes to CMTC. For the most part, they know the odds are against them getting commissions. The percentage who do is small. Some admit limitations of education, physique, or personality that they know will preclude any possibility of ever becoming Reserve officers. But they come back for more.

Since nobody knows why they do come back, I like to believe that they return just to feel those inexplicable shivers chase up and down their spines when Retreat is blown, or when the reviewing party salutes the colors. What's your theory?

/ / /

Notes on Reserve Activities Second Coast Artillery District

Colonel F. W. Stopford, C.A.C., Executive

THE inactive instruction of the Coast Artillery Reserves of the 2nd Coast Artillery District is proceeding along the line of qualifying officers for promotion and advancing their technical knowledge. To this end weekly troop school meetings are held in the Metropolitan Area and outlying areas. Instruction for every grade is given at these meetings. Preceding the Troop School Meeting of January 8th, 1934 the 910th Coast Artillery whose commanding officer is Lieutenant Colonel Clarence E. Doll, CA-Res., had a dinner in honor of Brigadier General William E. Cole, U. S. Army, District Commander, at which Colonel Frederick W. Stopford, CAC, the Executive of the 2nd District C.A. Reserves, was also present. Before breaking up for class instruction at the Troop School Meeting General Cole addressed all the Reserve officers present. The Coast Artillery Reserve Officers Club has been much in evidence this year. They have to their credit two very successful dances at Fort Totten and will give a formal dinner dance February 10th at The Building Trades Employers Club, 2 Park Avenue, New York City. Major Charles I. Clark, CA-Res., President of the Club and other members of the Committee deserve great credit for their activities. There are forty-three officers of this group on CCC duty distributed all over the United States. Letters from these officers indicate that they are gaining most valuable training in

housing, feeding and clothing men. Enrollments in the Army Extension School subcourses as of this date are 1,074. Colonel F. R. Stoddard, Commanding Officer 533rd C.A. (AA) gave a dance for the officers of his regiment in his home the evening of January 17th.

Richmond Association, Meeting

MINUTES of a meeting of the Richmond Chapter, Coast Artillery Association, Broad-Grace Arcade, Richmond, Va., January 17th, 1934.

The meeting was called to order by the Acting Chairman, Captain Joseph E. C. Conrace. The following members were in attendance:

Captain Emmet D. Butts, 916th CA(AA); Major R. M. Carswell, C.A.C.; Captain John N. Clark, 916th CA(AA); Captain Joseph E. C. Conrace, 916th CA(AA); First Lieut. Julius Jacobson, 916th CA(AA); First Lieut. Clark R. Nickerson, 916th CA(AA); First Lieut. Harry D. Sheets, 916th CA(AA); First Lieut. Hardin K. Bache, Jr., 916th CA; Second Lieut. Andrew C. Britton, 916th CA(AA); Second Lieut. Frank A. Damewood, Jr., 916th CA(AA); Second Lieut. James S. Hamilton, 916th CA(AA); Second Lieut. Douglass N. Moody, 916th CA(AA); and Second Lieut. Samuel S. Rosendorf, Jr., 916th CA(AA).

The Committee on By-Laws and Constitution reported progress.

The Nominating Committee reported their nominations for officers for the ensuing year consisted of:

Captain J. E. C. Conrace, President.

Captain J. N. Clark, Vice President.

Major R. M. Carswell, Secretary-Treasurer.

These nominations were accepted and it was moved, seconded and carried that the nominations close. It was moved and seconded that these nominees be declared elected. Motion carried.

Captain Conrace assumed duties of President and conducted remainder of meeting as such.

There being no further business, the meeting adjourned.

Some Statistical Data on the Officers' Reserve Corps

ON June 30, 1933, the total strength of the Officers' Reserve Corps, less National Guard officers who hold a dual commission, was 118,656. Of this number 86,024 were on the active list with full privileges of assignment, promotion and active duty training while 32,632 were on the inactive list without privileges of assignment, promotion or active duty training.

Classifying the total number of reserve officers between the arms and services we find that 77,216 belong to the combatant arms while 41,440 were assigned to the several services. It is, therefore, apparent that the effective strength of the Reserve Corps on the date mentioned was considerably below the number specified in the War Department procurement objective. If the officers on the inactive list do not take the necessary action, by means of extension school work, to be restored to full privileges, they will pass out of the picture at the expiration of five years from the date of their present commission. It is estimated that the attrition will be approximately 7,000 annually. Replacements are insufficient to counter-balance the losses, therefore, it is apparent that under the present system the reserve corps is likely to suffer a gradual diminution in effective strength.

By grades the officers' strength is divided as follows:

Colonels or above	1,136
Lieutenant Colonels	3,192
Majors	7,646
Captains	17,574
Lieutenants	89,108
Total	118,656

There is a total of 14,117 officers occupying a dual status, i.e., holders of commissions in both the National Guard and the Organized Reserves. This number is not included in the totals given above.

During the past training year 20,948 officers were called to active duty for fourteen days while 984 were given active duty training for periods in excess of fourteen days, many of these for a six months' period. Air Corps officers on extended active duty training amounted to 469.

During the last training year over 60,000 Reserve officers took some form of training, i.e., either active duty training, attendance at conferences, troop schools, terrain exercises, or attendance at special or general service schools.

The records of the Reserve officers (exclusive of the National Guard) in the extension school work are especially illuminating; 40,802 enrolled in extension school courses; 29,542 completed one or more sub-courses; the total number of sub-courses completed was 79,868 and the total number of credit hours earned was 1,035,020. It is interesting to note that of the total number or enrollments in the extension school sub-courses only slightly more than 50% belong to the Organized Reserves, while less than one-half of the total number of credit hours earned by means of the extension school work can be credited to Reserve officers.

The total appropriations for the last fiscal year for Organized Reserve training amounted to \$6,354,348.00. This amount includes the expense incident to active duty training and the maintenance of Reserve Corps headquarters and officers.

BOOK REVIEWS

WHAT WOULD BE THE CHARACTER OF A NEW WAR? Reviewed by Major General H. D. Todd, Jr. (Ret.) Enquiry organized by The Inter-Parliamentary Union Geneva. Harrison Smith and Robert Haas, New York, 1933.

Sir Norman Angell (Great Britain); Major K. A. Bratt and Lt. G. B. R. Lugel (Sweden); Francis Delaisi (France); Major General J. F. C. Fuller (Great Britain); Professor Paul Haensel (Northwestern University, U.S.A.); Professor Eli Hecksbu (Sweden); Professor Heisch (Switzerland); G. Hosono (Japan); Professor Joegenson (Denmark); Major Andie Mayer (France); General Montgelas (Germany); Professor Oualid (France); Nicholas Politis (Greece); General Pequin (France); General von Haeften (Germany); General von Metzsch (Germany); D. Gertrud Woker (Switzerland).

This book is one of the products of the Inter-Parliamentary Union—a union whose aim is described in the first article of its statutes as follows:

"The aim of the Inter-Parliamentary Union is to unite in common action the members of all Parliaments, constituted into national groups, in order to secure the co-operation of their respective states in the firm establishment and the democratic development of the work of international peace and coöperation between nations by means of a universal organization of nations. Its object is also to study all questions of an international character suitable for settlement by parliamentary action."

From the preface of the book it is learned that this union has been active for more than forty years and in many fields; that it just devoted itself to the cause of international arbitration, then it endeavored to promote the peaceful settlement of conflicts by active propaganda in favor of a reduction of armaments; and that it has conducted numerous conferences on the subject of the reduction in armaments. It has closely followed the work of the League of Nations and critically examined the results of the Washington Naval Conference of 1922.

Then while the above work was in progress the union conducted a study of the problem of Security.

Finally "with a view to providing a solid scientific basis for discussion on this subject, the security committee decided, with the approval of the Executive Committee of the union, to institute an enquiry into the nature of a future war which should place before the public the opinion of qualified experts on this disturbing question."

This book is the result of that decision. It comprises a series of articles by military men, economists, financiers, scientists, jurists, psychologists and specialists in demography.

The arrangement is such that one is not required to read all of its 420 pages. Each of the various subjects is completely covered by one writer.

All the subjects are not purely military in character. "The General Military Character of a Future War" for instance, is but one of the twelve subjects into which the book is divided. This subject is subdivided into "Modern Developments in Methods of Warfare," "The Tendencies of Developments in Warfare," "The Mechanization of Warfare," and "Aerial Weapons and Future War."

The remaining general subjects are:

The Decisive Aggressive Value of the New Agencies of War.

The War Potential.

International Ramification of War Industry.

Protection and Defense against the New Methods of Warfare.

Effect of a New War on the Mentality and the Morale of the Civil and Military population.

Demographic Effects of War on the Population during and after a War.

Importance of the Financial Force of a Country for Carrying on War—Possibility of Obtaining Credits Abroad.

Financial Consequences of War and of Preparation for War.

Effect of War on the World System of Economics and Finances.

Chemical and Bacteriological Warfare.

Future of International War on Warfare.

Each of the many writers concerned in the above list is evidently an authority on the subject he discussed and all the articles show great care and accurate knowledge of the facts presented.

Among these authors are soldiers of Great Britain, France, Germany and Sweden; while the civilian authors are from the above named countries and also from Japan, Switzerland, Denmark, Greece and Russia (The Russian is now a Professor at Northwestern University, U. S. A.)

In addition to the subjects covered, the book gives a brief biography of each writer, and it is interesting to study each article in connection with the biography of the author. There are no naval officers among the authors and no Americans.

The book also affords a study in psychology.

The French soldiers, as is typical of their class, wrote clearly, accurately, and concisely, basing their deductions and predictions on a logical analysis of historical events. No propaganda appears. There is an assumption that treaties will be observed. The Frenchmen ask, however,

how heavily will international engagements (under the League of Nations, the Paris Pact and other conventions) weigh in the scales? Will they be respected by both adversaries or by one only? And if by one only what will be the position of this one in the absence of a precise organization for mutual assistance?

The German soldiers are so deeply impressed with the restrictions on German military power that they constantly refer to it, stating in one case "if there were a disparity of armament as great as that existing between Germany and her armed neighbors, the term 'War' in its accepted sense could not be applied to any military conflict."

The Germans also look realities in the face and state, "But the vital interests of a nation that feels itself threatened will be weighed against uncertain possibilities of war, which cannot be foreseen. *No legal consideration will stand when the vital interests of a nation are at stake.*" (The italics are by the reviewers.)

One German soldier concludes that, "The outstanding features in the general military nature of future wars will be violence and strategem of every kind;" that, "both factors may be modified to a certain degree when it is of advantage to the belligerents our country to be moderate; but that there will be no moderation except that dictated by self-interest."

As seen from the above list of subjects the book is not a prediction based on the imagination, hopes or desires of the various authors. Most of the writers simply describe and discuss conditions that will affect the character of a new war. While American soldiers will find little to learn from the purely military subjects, they will undoubtedly find the others both interesting and instructive.

For instance, the studies submitted on the "War Potential" open an enormous field for consideration by both soldiers and statesmen, and the same can be said for the "Ramifications of War Industry" and for the subject entitled the "Effect on Mentality and Morale."

The treatment of the final subject in the book—"Future of International Law on Warfare"—is believed to be typical of the writings of many professors of International Law, in that it fails to emphasize the fundamental reason for the defiance of the rules of such law on the part of a powerful belligerent, which is the non-existence of any super court possessing a police power sufficiently strong to enforce the decisions. Another item of interest is that the civilian writers, never having been in battle, dwell more on the honors of the next war than do the experienced soldiers.

In general the book is a veritable storehouse of information on the conditions affecting the life of nearly every inhabitant of any country that may be obliged to prepare for or conduct war, consequently it should be found in libraries throughout the land. However, the naval officer who purchases the book will be disappointed, for with the exception of a brief reference to contraband of war and the fate of private property at sea in the chapter on the "Fu-

ture of International Law on Warfare," the character of a new war at sea is not discussed. In fact, it is believed that a more logical title of the book would have been "What would be the character of a new war on land?"

LA CAMPAGNE DE L'IRAQ, 1914-1918: The Siege of Kut-el-Amara. By Major M. Moukbil Bey. 196 pp. Berger-Levrault, Paris, 1933. Price 20 francs.

An interesting account by a Turkish officer of the Mesopotamian campaign and the siege of Kut-el-Amara. As will be remembered, the Turks took at Kut about 13,000 prisoners, among them five general officers including General Townshend, the British commander-in-chief in the Mesopotamian theatre of war. The author writes that Townshend had three chances to cut through the lines of the besieging Turkish 45th Division which for a time had been reduced to an effective strength of about 2,000 men. Although Townshend's forces outnumbered the besieging Turks by about five or six to one, the author observes that food shortage, doubtful morale of the Hindu troops representing more than one half of the total, disease, and inundation of most of the terrain around Kut-el-Amara had a decisive influence in forcing General Townshend's surrender. This circumstance, the author emphasizes, must be seriously weighed before a final judgment is passed over what had happened; and he adds, that General Townshend demonstrated unquestionable talent in making his dispositions for the defence of his position, and in the execution of his mission he preserved the honor of British arms. "We may leave to his peers to pass judgment upon his conduct as a soldier; here," the author writes in conclusion, "we are content to bow with deference and esteem before the memory of our old and gallant adversary who, after the war, became a sincere friend of our country".

A general map and twenty-eight sketches assist the reader in following the progress of the campaign in that remote theatre of operations of the Great War.

OVER THE TOP WITH THE 80TH, by Rush S. Young. Washington, D. C. Price \$1.35.

Mr. Young presents a new and most interesting type of source material, the history of a division through an individual's eyes. The style of the book is simple and free from any affectation, and yet contains information indicative of long and painstaking research.

The 80th Division was one of the many units called into being by the declaration of war, the personnel of the division was drawn from the Blue Ridge region of Pennsylvania, Virginia, and West Virginia, hence it received the name of "The Blue Ridge Division." On September 5, 1917, the first units of the division were mobilized at Camp Lee, Va. The men were almost entirely without military experience, and the officers were from the first officers' training school at Fort Meyer. After a short six weeks at this training center the division was entrained for France, sailing from New York and landing at Brest.

The 80th was put into training almost immediately,

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joining the 16th division, B.E.F., in the Samur area. After more training with the British along the Somme front, the 80th was transferred to the American 5th Army Reserve on August 18, 1918. The 318th Infantry of which Young was a member took no part in the Saint Mihiel offensive, their first test was on the Meuse-Argonne front.

For forty-six days the 80th was either in the lines or in rest areas, back of this front; and was the only American Division that returned to the lines three times in this offensive. This Division was a part of the Third Army Corps under Lieut. Gen. Bullard, many times proving itself to be one of the best units in the American Army.

Mr. Young himself did not participate in the whole of the Meuse-Argonne struggle; on November 3rd he was wounded, and was sent back to Vichy. The remainder of the division remained in the Meuse-Argonne sector until the signing of the Armistice. On May 17, 1919, the 80th division sailed from Brest, closing its military career.

(Continued from page 124)

STORAGE OF SUBMARINE MINE MATERIEL.—During a test of certain features of the mine equipment, many of the electrical features of the mine field were collected in the mining casemate at Fort Monroe. The display was so effective that the Chief of Coast Artillery directed the Coast Artillery Board to prepare a paper on this method of storage of mine equipment. Photographs and drawings were prepared and it is understood that instructions have been issued to the mine commands throughout the service to store certain parts of the Single Conductor equipment as shown in those drawings.

FORT KNOX EXERCISES.—In conjunction with the personnel of the staff of the Coast Artillery School, the Coast Artillery Board is studying the reports of the Fort Knox Exercises and is preparing a report thereon for the action of the Chief of Coast Artillery.

PRINTER'S INK. — MACHINE GUN BULLETS.—The Coast Artillery Board replied to a letter from the Chief of Coast Artillery concerning the use of, amounts of and colors of printer's ink to be used in marking bullets for antiaircraft machine guns so that hits of any particular gun can be identified or so that the hits obtained on each course of a practice may be distinguished from those obtained on other courses without the necessity of dropping the target after each course.

MACHINE-GUN TOWER.—First Lieutenant G. F. Heaney, Coast Artillery Corps, submitted a scheme for building a platform from which an antiaircraft machine gun could be fired with a minimum of interference by trees in the vicinity of the gun position. The Coast Artillery Board recommended that Lieutenant Heaney publish his article to the service. The basic feature of his design was the use of a long, heavy tree trunk or log to support a platform, the whole structure being guyed in three or more directions.